

Ethnobotanical Records of Medicinal Plants of Turkey Effective on Stress Management Complied with the Literature Survey in Their Chemical Content and Activities

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Abstract: The increase of challenges in people's lives, daily problems as well as traumatic events could lead them to experience stress. Because of the side effects of current drugs, the recent medications are not sufficient to cure stress-related diseases; new approaches are needed in order to find more effective medications with fewer side-effects. Ethnobotanical and ethnomedical research is increasingly recognized as a viable source of data and plausible pharmacological action of many plants. The review presents ethnobotanical information of the plants that have been used against stress-related diseases among local people of Turkey. In addition, a survey of the current literature on the topic aims to find new natural resources that will contribute to the development of drugs and bring them to the literature by scanning the scientific articles on the isolation and structure determination of the secondary metabolites of these medicinal plants, which have been already in use among the public for stress-related disorders for centuries. This research is not only the first step in the research of promising new compounds against stress but it is also a presentation of data on medicinal plants of Turkey: Their medicinal parts, method of preparation, usage patterns and, if recorded, their dosages.

Keywords: Stress; herbal drugs; ethnobotanical. © 2022 ACG Publications. All rights reserved.

1. Introduction

Stress is a complicated phenomenon worldwide that might lead to various diseases. The stress level of people is increasing dramatically and steadily; hence the statistics of stress are climbing significantly according to many authorities. People suffer from stress and most of them has peaked in the last few years. Because of the continuing pandemic (COVID-19) around the world, it is highly probable that the percentages of the people with stress-related disorders will increase just like post SARS epidemic time [1].

According to Hans Selye, who is the pioneer of defining the stress phenomenon, stress is the reflection of negative or positive situations within humans; it is the body's response [2]. There are many disagreements about how to define stress among people. Most people focus on negative emotions when

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they explain the stress issue although stress could be beneficial in the way of people's achievements in their lives for a short-term-period [3]. However, when the stress level is continuously high in a human body, stress hormones increase, too, and can cause severe health problems eventually [3]. The cause of stress in human life could be daily problems, as well as traumatic events such as the economic crisis of the country, concern for the future, violence, crime, and loss of a loved one. Researchers argue that stress could be a trigger for a variety of psychological and physiological disorders like depression, burnout syndrome, immune system replacement, heart diseases, hypertension, stroke, obesity, drug addiction, dragging suicide [3].

The current medications that have been used for the treatment of stress are not sufficient because of the complicated mechanism of stress that is still unsolved [4]. Therefore, more research is needed to complete this puzzle. Natural resources have played an important role to reach new medications, pathways, and methods in terms of clarifying intricate illnesses. One of the most important natural sources has been medicinal plants. Plants have been used for hundreds of years all over the world in the treatment of a variety of diseases. Thus ethnobotanical knowledge has been a background for the studies in the pharmacognosy field and taken a crucial position for the future treatment of possibilities and solutions [5]. Although medicinal plants have been used for centuries for the treatment of various diseases among local people, scientific research should be conducted for their development as drugs. Acquiring ethnobotanical knowledge and transforming it into scientific research is one of the most important jobs for us as pharmacognosts. Scientists have been studying herbal drugs and some medicinal plants have already been explored and their activities proved scientifically, as well. Pharmacist Friedrich Serturmer, who is a pioneer of alkaloid chemistry, isolated one of the most important molecules in medicine "Morphine" from the plant *Papaver somniferum* L. for the first time [6]. Morphine is a significant high-level hypnotic agent and helps many cancer patients with high-level cancer pain. Hence, medicinal plants could have a significant role in new treatment options [6].

Turkey is one of the richest countries in the world regarding plant diversity and their endemism. There are various herbs in this country that have been used against diseases for centuries because of their pharmacological effects. This literature review helps to gather the knowledge of the plants that are used in the treatment of stress-related diseases for decades among local people in Turkey both traditionally and scientifically. This study first aims to bring international as well as scientific awareness and visibility to Turkey's indigenous plants with medicinal properties, and to examine the scientific data/s of the plants to see how evidence-based usage of these plants in the literature. The studies aim also includes identifying scientific gaps for the new research areas with unsearched herbs. Due to the fact that most of the ethnobotanical dissertations are in Turkish, used parts, preparation methods, dosages, if any, and scientific articles of the plants have been compiled and introduced to the international literature. The study is not only targeting to be a comprehensive summary of natural sources in terms of providing new possibilities for the field of drug development, but it also wishes to provide a well-documented archive to obtain information about medicinal plants that have been used for years in the treatment of stress-related diseases among indigenous people of Turkey. This survey is only the beginning of future pharmaceutical studies. Each of these plants may be significant for studying stress-related diseases. Further studies are needed to determine the most suitable herbal drug regarding its safety and efficiency.

2. Materials and Methods

The determination of the medicinal plants having been used for the treatment of stress-related disorders among local people from the different regions of Turkey have been completed by the investigation conducted on the previously written Master Theses and Ph.D. dissertations recorded in the National Thesis Center of the Council of Higher Education database of Turkey [7]. The dissertations have been searched and established by Turkish keyword: "Etnobotanik" (Ethnobotany). While searching the plants the following keywords were also used for the dissertation in foreign languages written between 1998 to present: Sedative, stress, anxiety, depression, calming, nerves, panic attack, fatigue, insomnia, and relaxant, in their original languages. As the following process, the herbs used conventionally against stress-related diseases in Turkey have been surveyed through the databases (Science Direct, Ebscohost, Web of Science, PubMed, and Google Scholar) to determine whether the

herbal drugs have been studied scientifically before or not. The National Thesis Center of the Council of Higher Education database was investigated until January 2021, and the published research from defined plants were investigated until February 2022.

3. Results and Discussion

3.1. Literature Survey of the Herbal Drugs

This study provides us a concise knowledge about the plants growing in the different parts of Turkey and their medicinal properties. These plants have been used by local people for the treatment of stress-related diseases. A summary of the investigation of the medicinal plants is presented in Figure 1. As a result of the survey, 98 numbers of taxa from 31 families were determined related to their anti-stress activity from the dissertations. The preparation method of the plants is mostly infusion or decoction from various parts of them such as aerial parts, roots, leaves, fruits, stems, etc. The families and their number of taxa are given in Table 1. The distribution of the families of taxa is shown as a pie chart (Figure 2) to demonstrate the families of the plants most used in stress-related diseases. To present the frequency of plants regarding their uses in regions of Turkey, the number of dissertations used as sources, name of the species, and provinces is displayed in Table 2. The plants are classified by regions of Turkey based on a survey of the dissertations that we have found and expressed as a bar graph (Figure 3). The literature review of the plants has been summarized in Table 3 sorted alphabetically according to their family names. The information of the related plants is given as headlines: Taxa & Their Endemism, Vernacular Name / English Name, Using Part / Traditional Preparations / Usages, Documented Use in Literature, References of the Dissertations.

According to the literature review, it is found that 43 out of 98 taxa, *Eryngium campestre*, *Smyrniium connatum* Boiss. & Kotschy., *Anthemis chia* L., *Anthemis coelopoda* Boiss. var. *bourgaei* Boiss., *Anthemis cotula* L., *Anthemis cretica* L. subsp. *albida* (Boiss.) Grierson, *Anthemis fumariifolia* Boiss. (Endemic), *Anthemis tinctoria* L. (synonym of *Anthemis tinctoria* L. var. *tinctoria*), *Anthemis tinctoria* L. var. *pallida*, *Cnicus benedictus* L., *Helichrysum plicatum* DC. (Endemic), *Tanacetum parthenium* (L.) Sch. Bip, *Tripleurospermum parviflorum* (Willd.) Pobed., *Anchusa azurea* Miller, *Cardaria draba* (L.) Desv. subsp. *draba*, *Nasturtium officinale* L., *Cornus mas* L., *Cucumis sativus* L., *Juniperus oxycedrus* L., *Erica manipuliflora* Salisb., *Melilotus indica* (L.) All., *Hypericum atomarium* Boiss., *Calamintha nepeta* L. Savi, *Melissa officinalis* L. subsp. *inodora* Bornm., *Mentha longifolia* (L.) Hudson subsp. *typhoides* (Briq.) Harley var. *typhoides*, *Origanum onites* L., *Origanum sipyleum* L. (Endemic), *Salvia palaestina* Benth, *Salvia tomentosa* Mill., *Salvia verticillata* L. subsp. *amasiaca* (Freyn & Bornm.) Bornm, *Sideritis bilgerana* P.H. Davis (Endemic), *Stachys cretica* L. subsp. *anatolica* Rech.f. (Endemic), *Stachys thirkei* K. Koch, *Thymus pseudopulegioides* Klokov et Des.-Shost., *Epilobium hirsutum* L., *Glaucium corniculatum* (L.) Curtis, *Glaucium leiocarpum* Boiss., *Roemeria hybrida* L. DC, *Plantago lanceolata* L., *Lysimachia punctata* L., *Crataegus monogyna* Jacq. subsp. *monogyna* = *Crataegus monogyna* Jacq. var. *monogyna*, *Salix babylonica* L., *Physalis alkekengi* L., have been studied neither *in vitro* nor *in vivo* related to their anti-stress activities yet, but they have few studies on the other activities such as antioxidant, antibacterial, cytotoxic etc. Additionally, 15 of 98 taxa, *Scandix australis* L. subsp. *grandiflora* (L.) Thell., *Achillea arabica* Kotschy, *Cota austriaca* (Jacq.) Sch. Bip., Oesterr. Bot. Wochenbl., *Cota wiedemanniana* (Fisch. & C. A. Mey.), *Tripleurospermum callosum* (Boiss. & Heldr.) E. Hossain (Endemic), *Vicia tetrasperma* (L.) Schreb., *Salvia adenocaulon* P.H. Davis (Endemic), *Sideritis libanotica* Labill. subsp. *kurdica* (Bornm) Hub.-Mor., *Thymus leucostomus* Hausskn. et. Velen. var. *argillaceus* Jalas (Endemic), *Tilia rubra* DC. subsp. *caucasica* (Rupr.) V. Engler, *Papaver dubium* L., *Papaver libanoticum* (Schott&KotschyexBoiss.) Kadereit subsp. *polychaetum* (Schott & Kotschyex Boiss.) Kadereit, *Platanus orientalis* L. (Delbiyr), *Crataegus aronia* (L.) Bosc. ex DC var. *aronia*, *Crataegus azarolus* var. *azarolus* L., have not been studied on any kind of activities. In addition, 8 out of 98 taxa have been determined as endemic in Turkey.

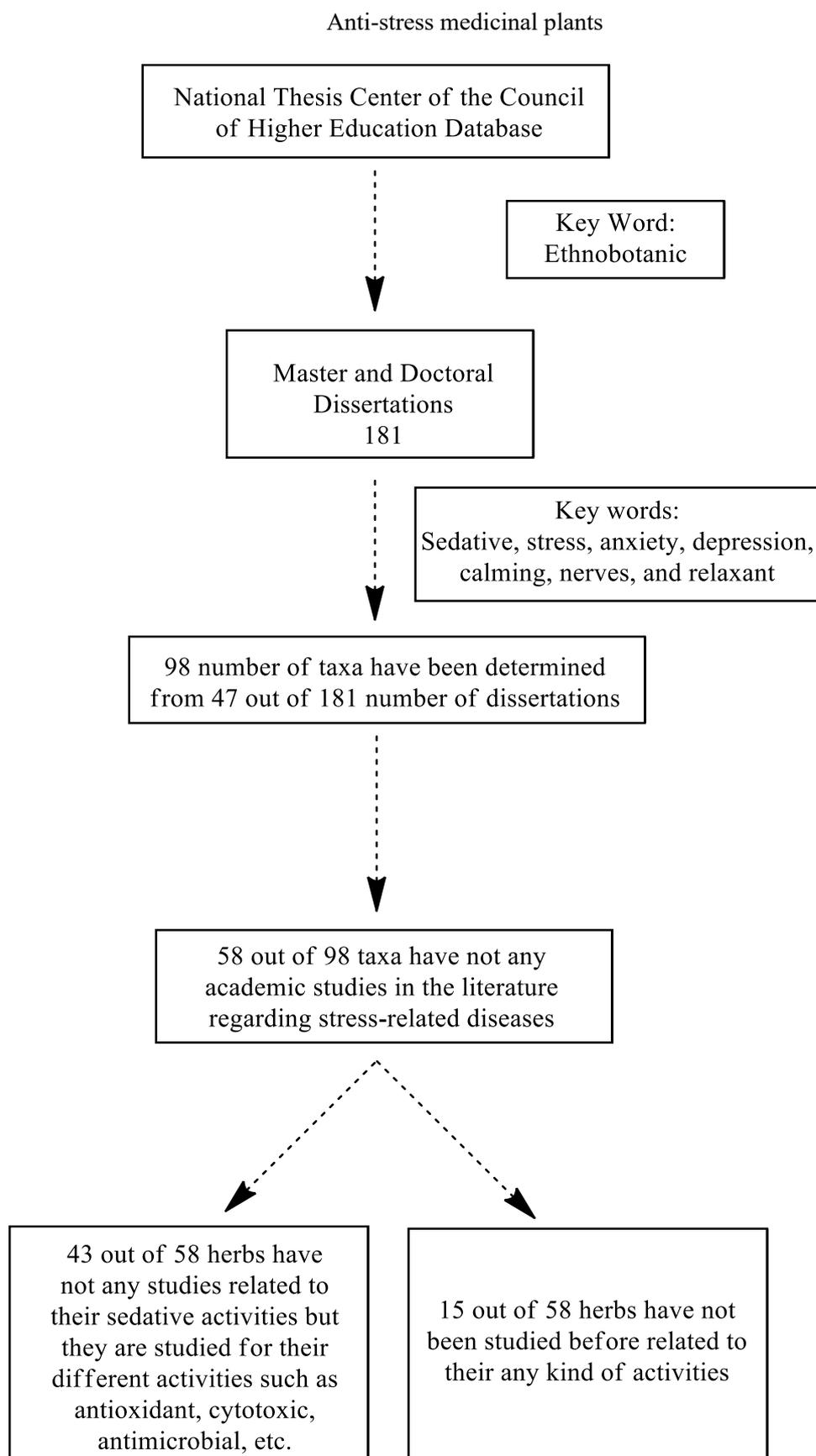
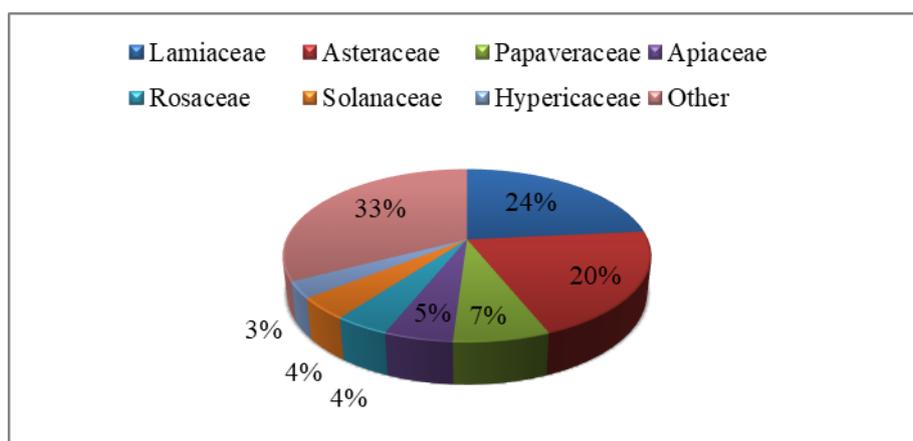


Figure 1. Summary of the investigation of the medicinal plants that are used against stress-related diseases in Turkey

Table 1. Families and their number of taxa

Family	T#	Family	T#	Family	T#	Family	T#
Apiaceae	5	Cupressaceae	1	Myrtaceae	1	Rosaceae	4
Asteraceae	20	Ericaceae	2	Nitrariaceae	1	Rutaceae	1
Boraginaceae	1	Fabaceae	2	Onagraceae	1	Salicaceae	1
Brassicaceae	2	Hypericaceae	3	Papaveraceae	7	Santalaceae	1
Cannabinaceae	2	Juglandaceae	1	Plantaginaceae	2	Solanaceae	4
Caprifoliaceae	2	Lamiaceae	23	Platanaceae	1	Urticaceae	2
Cornaceae	1	Lythraceae	1	Poaceae	1	Verbenaceae	1
Cucurbitaceae	1	Malvaceae	2	Primulaceae	1	TOTAL	98

T#: Number of taxa

**Figure 2.** Distribution of the plants by families according to dissertations determined**Table 2.** Number of dissertations, name of species, and provinces displayed by region in Turkey

Regions	#	Provinces	Name of Taxa	R
Marmara (1-10)	1	Balıkesir	<i>Melissa officinalis</i> , <i>Thymus pseudopulegioides</i>	[8]
	2	Balıkesir	<i>Cnicus benedictus</i> , <i>Anchusa azurea</i> , <i>Hypericum perforatum</i> , <i>Melissa officinalis</i> subsp. <i>altissima</i> , <i>Datura stramonium</i>	[9]
	3	Balıkesir	<i>Eryngium campestre</i> , <i>Artemisia absinthium</i>	[10]
	4	Balıkesir	<i>Matricaria chamomilla</i> , <i>Melilotus indica</i> , <i>Vicia tetrasperma</i> , <i>Melissa officinalis</i> , <i>Rosmarinus officinalis</i> , <i>Salvia tomentosa</i> , <i>Stachys thirkei</i> , <i>Glaucium corniculatum</i> , <i>Papaver somniferum</i>	[11]
	5	Bursa	<i>Hypericum perforatum</i> , <i>Melissa officinalis</i> subsp. <i>officinalis</i> , <i>Viscum album</i> subsp. <i>album</i> , <i>Rosa canina</i> , <i>Thymus pseudopulegioides</i>	[12]
	6	Çanakkale	<i>Papaver rhoeas</i>	[13]
	7	Çanakkale	<i>Lavandula stoechas</i> , <i>Rosmarinus officinalis</i>	[14]
	8	Çatalca	<i>Hypericum perforatum</i> , <i>Plantago major</i> subsp. <i>major</i> , <i>Plantago lanceolata</i> , <i>Crataegus monogyna</i> subsp. <i>monogyna</i> = <i>Crataegus monogyna</i> var. <i>monogyna</i> , <i>Tilia argentea</i>	[15]
	9	İzmit	<i>Rosmarinus officinalis</i> , <i>Physalis alkekengi</i>	[16]
	10	Sakarya	<i>Urtica dioica</i>	[17]
Aegan (11-18)	11	Afyonkarahisar	<i>Helichrysum plicatum</i>	[18]
	12	Denizli	<i>Hypericum atomarium</i> , <i>Hypericum perforatum</i>	[19]
	13	Kütahya	<i>Cornus mas</i>	[20]
	14	Manisa	<i>Foeniculum vulgare</i> , <i>Mentha x piperita</i> , <i>Origanum onites</i> , <i>Rosmarinus officinalis</i> , <i>Salvia tomentosa</i>	[21]

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	15	Muğla	<i>Lavandula stoechas</i> subsp. <i>stoechas</i>	[22]
	16	Muğla	<i>Anthemis tinctoria</i> , <i>Lavandula stoechas</i> subsp. <i>stoechas</i> , <i>Myrtus communis</i> , <i>Papaver rhoeas</i>	[23]
	17	Muğla	<i>Erica manipuliflora</i>	[24]
	18	Uşak	<i>Matricaria chamomilla</i> , <i>Hypericum perforatum</i> , <i>Glaucium leiocarpum</i> , <i>Papaver dubium</i> , <i>Papaver somniferum</i> , <i>Plantago lanceolata</i>	[25]
	19	Adana	<i>Ocimum basilicum</i> , <i>Sideritis bilgerana</i>	[26]
	20	Antalya	<i>Coriandrum sativum</i> , <i>Foeniculum vulgare</i> , <i>Matricaria chamomilla</i> , <i>Nasturtium officinale</i> , <i>Cucumis sativus</i> , <i>Hypericum perforatum</i> , <i>Origanum onites</i> , <i>Epilobium hirsutum</i> , <i>Plantago major</i> subsp. <i>major</i> , <i>Plantago lanceolata</i> , <i>Valeriana dioscoridis</i> , <i>Peganum harmala</i>	[27]
	21	Antalya	<i>Foeniculum vulgare</i> , <i>Anthemis chia</i> , <i>Bellis perennis</i> , <i>Lavandula stoechas</i> subsp. <i>stoechas</i>	[28]
Mediterranean Coast (19-25)	22	Maraş	<i>Smyrniium connatum</i> , <i>Hypericum perforatum</i> , <i>Plantago major</i> subsp. <i>major</i>	[29]
	23	Mersin	<i>Juglans regia</i> , <i>Mentha x piperita</i> , <i>Crataegus monogyna</i> subsp. <i>monogyna</i> = <i>Crataegus monogyna</i> var. <i>monogyna</i>	[30]
	24	Mersin	<i>Zea mays</i> , <i>Hypericum perforatum</i> , <i>Lavandula angustifolia</i> , <i>Lavandula</i> sp. (<i>Lavandula stoechas</i>), <i>Rosmarinus officinalis</i> , <i>Roemeriahybrida</i> , <i>Punica granatum</i> , <i>Citrus aurantium</i> , <i>Peganum harmala</i>	[31]
	25	Hatay	<i>Lavandula stoechas</i> subsp. <i>stoechas</i>	[32]
	26	Düzce	<i>Anthemis cotula</i> , <i>Tanacetum parthenium</i> , <i>Hypericum perforatum</i> , <i>Melissa officinalis</i> , <i>Rosmarinus officinalis</i> , <i>Lysimachia punctata</i>	[33]
Black Sea Coast (26-30)	27	Karabük	<i>Anthemis wiedemanniana</i> , <i>Salvia tomentosa</i> , <i>Rosa canina</i>	[34]
	28	Rize	<i>Cannabis sativa</i> , <i>Humulus lupulus</i>	[35]
	29	Trabzon	<i>Calamintha nepeta</i> , <i>Epilobium hirsutum</i>	[36]
	30	Tokat	<i>Juglans regia</i> , <i>Mentha x piperita</i> , <i>Urtica urens</i>	[37]
	31	Ankara	<i>Anthemis cretica</i> subsp. <i>albida</i> , <i>Anthemis tinctoria</i> var. <i>tinctoria</i> , <i>Hyoscyamus reticulatus</i> , <i>Peganum harmala</i>	[38]
	32	Eskişehir	<i>Anthemis tinctoria</i> var. <i>pallida</i> , <i>Matricaria chamomilla</i> var. <i>recutita</i> , <i>Hypericum perforatum</i> , <i>Melissa officinalis</i> subsp. <i>officinalis</i> , <i>Salvia tomentosa</i> , <i>Thymus pseudopulegioides</i> , <i>Salix babylonica</i> , <i>Tilia rubra</i> subsp. <i>caucasica</i>	[39]
Central Anatolia (31-36)	33	Konya	<i>Juniperus oxycedrus</i> , <i>Hypericum scabrum</i> , <i>Melissa officinalis</i> , <i>Plantago major</i> , <i>Plantago lanceolata</i>	[40]
	34	Konya	<i>Scandix australis</i> subsp. <i>grandiflora</i> , <i>Bellis perennis</i> , <i>Inula britannica</i> , <i>Tripleurospermum callosum</i> , <i>Origanum sipyleum</i> , <i>Salvia adenocaulon</i> , <i>Salvia verticillata</i> subsp. <i>amasiaca</i> , <i>Stachys cretica</i> subsp. <i>anatolica</i> , <i>Papaver libanoticum</i> subsp. <i>polychaetum</i> , <i>Papaver somniferum</i> var. <i>somniferum</i> , <i>Crataegus monogyna</i> subsp. <i>monogyna</i> = <i>Crataegus monogyna</i> var. <i>monogyna</i>	[41]
	35	Nevşehir	<i>Anthemis fumariifolia</i> , <i>Anthemis tinctoria</i> var. <i>tinctoria</i> , <i>Mentha longifolia</i> subsp. <i>typhoides</i>	[42]
	36	Yozgat	<i>Peganum harmala</i>	[43]

Eastern Anatolia (37-41)	37	Elazığ	<i>Anthemis coelopoda</i> var. <i>bourgaei</i> , <i>Melissa officinalis</i> subsp. <i>inodora</i> , <i>Platanus orientalis</i>	[44]
	38	Erzincan	<i>Anthemis tinctoria</i> var. <i>tinctoria</i> , <i>Hypericum scabrum</i>	[45]
	39	Erzincan	<i>Salvia sclarea</i>	[46]
	40	Iğdır	<i>Datura stramonium</i> , <i>Urtica dioica</i>	[47]
	41	Malatya	<i>Hypericum scabrum</i> , <i>Lavandula</i> sp. (<i>Lavandula stoechas</i>), <i>Melissa officinalis</i> subsp. <i>officinalis</i> , <i>Papaver dubium</i> , <i>Crataegus aronia</i> var. <i>aronia</i>	[48]
Southeastern Anatolia (42-47)	42	Adıyaman	<i>Foeniculum vulgare</i> , <i>Tripleurospermum parviflorum</i> , <i>Cardaria draba</i> subsp. <i>draba</i> , <i>Hypericum scabrum</i> , <i>Lavandula stoechas</i> , <i>Rosmarinus officinalis</i> , <i>Valeriana officinalis</i>	[49]
	43	Adıyaman	<i>Humulus lupulus</i> , <i>Calluna vulgaris</i> , <i>Mandragora officinarum</i> , <i>Valeriana officinalis</i> , <i>Verbena officinalis</i> , <i>Peganum harmala</i>	[50]
	44	Diyarbakır	<i>Hypericum scabrum</i> , <i>Vitex agnus-castus</i>	[51]
	45	Mardin	<i>Anthemis cotula</i> , <i>Cota austriaca</i> , <i>Cota wiedemanniana</i> , <i>Melissa officinalis</i> subsp. <i>inodora</i> , <i>Crataegus azarolus</i> var. <i>azarolus</i>	[52]
	46	Urfa	<i>Salvia palaestina</i>	[53]
	47	Urfa	<i>Achillea arabica</i> , <i>Ocimum basilicum</i> , <i>Sideritis bilgerana</i>	[54]

R: References of dissertations

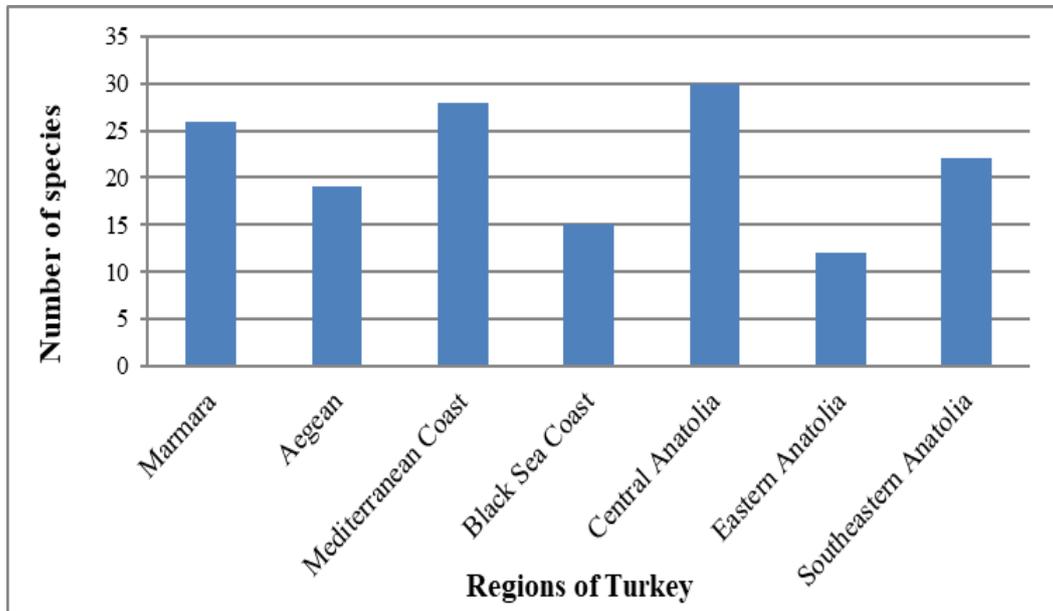


Figure 3. Distribution of the plants by regions of Turkey according to dissertations determined

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Table 3. Literature review of the medicinal plants

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
1. Apiaceae			
1.1 <i>Coriandrum sativum</i> L.	<ul style="list-style-type: none"> • Kişniş • Coriander 	<ul style="list-style-type: none"> • <u>Using part:</u> Seeds • <u>Stress-related:</u> a) Tea / Usage: Calming nerves • <u>Other:</u> a) Tea / Usage: Appetizer, digestive, and carminative 	[27]
1.1.1. Documented Use in Literature of <i>C. sativum</i>			
1.1.1.1. Stress-related: a) Aq. E., flavonoids, phenols, alkaloids, and tannins rich: Anxiolytic, potential sedative, and muscle relaxant effects with spontaneous and neuromuscular coordination activities by Animex activity, meter rotarod, elevated plus-maze, and open arms assays in mice [55], anxiolytic in restraint stressed mice with effect on monoamine, GABA, and glutamate levels in brain's various regions [56], b) Aq. E., and EO.: Sleeping time prolongation, sedative-hypnotic activity in male albino mice [57], c) EtOH E. (2%) of seeds in sunflower oil: Injected to mother mice during breastfeeding to newborn baby mice, memory enhancer effect in the baby with step-through passive avoidance task assay [58], d) Diethyl ether E. of seeds: Sedative activity through forced swimming test in mice (Fluoxetine as a standard) [59]			
1.1.1.2. Other: a) EO.: Antioxidant, blood sugar, and body heat reducer, hypolipidemic, analgesic, antimutagenic, diuretic, antimicrobial, carminative, antispasmodic [60], effective on <i>Xenopus oocytes</i> by GABAA receptor inhibition [61], effective in spatial memory of A β (1-42) rats, beneficial in Alzheimer's disease [58], b) EtOAc E. of roots: Antiproliferative on cancer cell migration, and protective against DNA damage of MCF7 [58], c) Aq., and EtOH E.: Anthelmintic, insecticidal, mutagenic, antimutagenic [58], d) EO.: Biofilm inhibitory activity on Gram+ <i>S. aureus</i> and Gram- <i>E. coli</i> by minimum inhibitory concentration test [62], e) MeOH E. (fruits): Antioxidant (DPPH radical scavenging activity) [63]			
Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
1.2. <i>Eryngium campestre</i> L.	<ul style="list-style-type: none"> • Şeker diken • Field eryngo 	<ul style="list-style-type: none"> • <u>Using part:</u> Leaves, & branches • <u>Stress-related:</u> a) Tea obtained after boiling 10 minutes with W. / Usage: Sedative • <u>Other:</u> NA 	[10]
1.2.1. Documented Use in Literature of <i>E. campestre</i>			
1.2.1.1. Stress-related: NA			
1.2.1.2. Other: a) MeOH E.: Beneficial for Alzheimer's disease through β -amyloid A β 42 inhibitor, without any damage on human H4 cell line by using sensitive sandwich enzyme linked immunosorbent assay (ELISA), non-active on COX-1 and COX-2 receptors [64], b) EtOH E. of roots, and aerial parts: Moderate anti-inflammatory, and antinociceptive activity in mice by carrageenan-induced hind paw oedema, TPA-induced ear oedema, and <i>p</i> -benzoquinone-induced writhing assays [65], c) MeOH E.: Against colon cancer, and strong antitumor on potato disc method assay [66], d) EtOH, and MeOH E.: Anti-inflammatory, antinociceptive, antibacterial against MRSA [67, 68], e) MeOH E. and flavonols glycosides of aerial parts: Antioxidant on DPPH radical scavenging and reducing power tests [64], f) 20% tincture (maceration with EtOH): Anti-inflammatory by reducing the leucocytes infiltration, and the nitro-oxidative stress [69], g) <i>n</i> -Butanol E. of roots, and aerial parts: Antiradical, good anti-inflammatory, antipyretic (250 mg/kg, and 500 mg/kg doses) in female Wistar rats [70], h) EO., major compound, germacrene D: Cytotoxic against A375 (human malignant melanoma), MDA-MB 231 cells (human breast adenocarcinoma), and HCT116 cells (human colon carcinoma) cell lines with MTT assay, cisplatin as a standard [71], i) MeOH E. of aerial parts nanocapsulated in 1.5% chitosan, and 8.5% maltodextrin in canola oil.: Strong antioxidant activity [72]			
1.3. <i>Foeniculum vulgare</i> Mill.	<ul style="list-style-type: none"> • Arapsaçı, Salkım saçak, Rakıotu, Rezene • Fennel, Sweet fennel, Bitter fennel, Wild fennel, Large fennel 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts, & leaves • <u>Stress-related:</u> a) Inf. of dried seeds (steeping for 10 minutes) / Usage: Neural disorder or gastro-intestinal problem generating from stress, and intensifies the intestinal system, 1 or 2 glasses can be drunk a day, until 3 days; b) Tea, Inf. / Usage: Sedative for babies, Int. 	[21, 27, 28, 49]

- Other: a) Salad or roasted / Usage: Anthelmintic; b) Fresh or roasted / Usage: Rheumatic diseases; c) Inf. with fresh leaves / Usage: Blood pressure diseases; d) Raw or roasted / Usage: Liver diseases, and to strengthen it; e) Poultice preparing with fresh leaves are used Ext., and Inf. is used Int. / Usage: Eye pains Ext., and Int., f) The liquid obtained from boiling seeds, and using with sweeten / Usage: Galactagogue; g) Liquid obtained from boiling seeds / Usage: Menstrual cramps; h) Tea / Usage: Flatulence in the intestinal system, and diuretic

1.3.1. Documented Use in Literature of *F. vulgare*

1.3.1.1. Stress-related: a) W. E. of fruits: Antistress by changing of urinary ingredients, memory enhancer, and antioxidant in rats [73], b) 2%, and 4% seeds' pellet: Memory increaser, and antidepressant by forced swimming, stationary rod, passive avoidance, and water maze assays in mice [74], c) EO.: Antidepressant via dopaminergic and serotonergic, not to the noradrenergic system with force swimming assay [75]

1.3.1.2. Other: a) EtOH, and W. E.: Antimicrobial against *Campylobacter jejuni*, *Helicobacter pylori*, and multidrug-resistant *Acinetobacter baumannii* infections, and antihirustism activity with hair diameter evaluation [76], b) EO., and EtOH E.: Bronchodilatory for asthma in guinea pig respiratory tracts, anethole has relaxant on muscle of skeleton, saline as a standard, non-active on cholinergic system related histamine, H1, and b2-adrenergic receptors, and galactagogue, hypotensive, aphrodisiac, and non-toxic [77], c) E.: Effective in colic babies by observation of crying times of them [78], d) EO., and anethole: Antithrombotic through antiplatelet, clot destabilizing and vasorelaxant activities in Guinea pig plasma [79], e) 70% MeOH E.: Good anti-tumoural against B16F10 melanoma cell line in 200 µg/mL, and protective on normal cell lines [80], f) Polymers of anethole, dianethole, and photoanethole: Oestrogenic agents, anethole: Safe antithrombotic agent due to its antiplatelet activity, clots destabilising effect, and vaso-relaxant [81], g) EO., fenchone, and trans-anethole: Antibacterial, antifungal (reduce mycelial growth, and germination of *Sclerotinia sclerotiorum*), antithrombotic, antioxidant, anti-inflammatory, antidiabetic, gastroprotective, hepatoprotective, and miscellaneous activities [81], h) W. E. of fruits: Antidiabetic in normal and streptozotocin-induced diabetic rats by blood sugar measurement [82], decreasing activity on tumor and metastases of breast cancer in mice through expression levels tumor marker in ovarian, and tumoral tissue, intraperitoneally administration [83], i) Oral fennel drop 2%: Menstrual pain reducer [84], j) Cream of E. (seeds): Managed the symptoms of vaginal atrophy in postmenopausal women [85], k) Hydro-alcoholic E. of seeds: Reduce reproductivity (anti-fertility activity) [86], l) EO.: Antioxidant, cytotoxic with DPPH and ABTS free radicals scavenging activity, and β-carotene/linoleic acid bleaching inhibition assays, and colon cancer (HT29) cell line [87], k) MeOH E. of seeds: Free Radical scavenging activity by Fenton reaction, equal to ascorbic acid, standard [88], m) (-) Fenchone (purchased): Antidiarrheal activity in mice through antimotility mechanism, intragastric administration, and antifungal against *C. albicans*, *C. tropicalis*, *C. Krusei*, antibacterial not observed [89]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
1.4. <i>Scandix australis</i> L. subsp. <i>grandiflora</i> (L.) Thell.	<ul style="list-style-type: none"> • İğnelik, Leylek Gagası • NA 	<ul style="list-style-type: none"> • <u>Using part</u>: Leaves, & aerial parts • <u>Stress related, & Other</u>: a) Tea / Usage: Sedative, digestive, against infections 	[41]
1.4.1. Documented Use in Literature of <i>S. australis</i> subsp. <i>grandiflora</i> : NA			
1.5. <i>Smyrniium condatum</i> Boiss. & Kotschy.	<ul style="list-style-type: none"> • Baldıran • Wild celery 	<ul style="list-style-type: none"> • <u>Using part</u>: Young stems • <u>Stress-related</u>: a) - / Usage: Sedative, and hypnotic • <u>Other</u>: a) Tea / Usage: Respiratory disorders 	[29]

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1.5.1. Documented Use in Literature of *S. connatum*1.5.1.1. Stress-related: NA1.5.1.2. Other: a) W. E: Antioxidant, superoxide, and nitric oxide radical scavenger [90]**2. Asteraceae**

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|---|---|---|
| 2.1. <i>Achillea arabica</i> Kotschy | <ul style="list-style-type: none"> • Civan perçemi, Basur otu, Hanzabel, Yılan pungu • Yarrow | <ul style="list-style-type: none"> • <u>Using part:</u> Flowers [54] • <u>Stress-related:</u> a) Inf. / Usage: Anti-stress • <u>Other:</u> a) Inf./ Usage: Hemorrhoid, gastrointestinal system problems, and expectorant |
|---|---|---|

2.1.1. Documented Use in Literature of *A. arabica*: NA

- | | | |
|-------------------------------------|--|---|
| 2.2. <i>Anthemis chia</i> L. | <ul style="list-style-type: none"> • Papatya, Babaçya • NA | <ul style="list-style-type: none"> • <u>Using part:</u> Flowers [28] • <u>Stress-related:</u> a) Tea (Steeping) / Usage: Sleeping problems • <u>Other:</u> a) Tea (Steeping) / Usage: Diuretic, for cough, sinusitis as inhalation, throat inflammation, cancer, menstrual, and birth pain; b) 3 number of flowers are swallowed / Usage: Malaria disease; c) flowers are boiled with W. / Usage: Hemorrhoid problem |
|-------------------------------------|--|---|

2.2.1. Documented Use in Literature of *A. chia*2.2.1.1. Stress-related: NA2.2.1.2. Other: a) Flowers' MeOH E., major compounds, chlorogenic / protocatechuic acid, and luteolin 7-glucoside: Inhibitor against *S. aureus*, and coagulase negative [91], antioxidant [92], b) Flowers' MeOH, and EtOAc E.: Inhibitor activity against α -amylase, and tyrosinase enzymes [92]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
2.3. <i>Anthemis coelopoda</i> Boiss. var. <i>bourgaei</i> Boiss.	<ul style="list-style-type: none"> • Papatya, Akçabaş, Yavşan, Akbabatça, Kelemli, Akbaşotu • NA 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts, flowers, & leaves • <u>Stress-related:</u> a) Aerial parts are steeped like tea / Usage: Sedative • <u>Other:</u> a) Dried leaves, and flowers are steeped like tea / Usage: Abdominal pain, cold, and diarrhea; b) E. of leaves is boiled with W., Int. / Usage: Nasal congestion; c) Aerial parts are steeped like tea / Usage: Protect the body against inflammation 	[44]

2.3.1. Documented Use in Literature of *A. coelopoda* var. *bourgaei*2.3.1.1. Stress-related: NA2.3.1.2. Other: a) Aerial parts' EtOAc, and acetone E.: Antimicrobial activity [93]

- | | | |
|---------------------------------------|--|--|
| 2.4. <i>Anthemis cotula</i> L. | <ul style="list-style-type: none"> • Papatya, Beybun, Kulilkakêhvan, Kêhvan, Beybuniç, Beybun, İloilto • Dog fennel, Mayweed chamomile, Stinking mayweed | <ul style="list-style-type: none"> • <u>Using part:</u> Leaves, flowers, aerial parts, & umbels [33, 52] • <u>Stress-related:</u> a) Umbels are boiled with W., Int. / Usage: Sleeping problems, exhaustion, depression; b) Flowers / Usage: Sedative • <u>Other:</u> a) Inf. of aerial parts / Usage: Antitussive, cold, flu, asthma, bronchitis, and diabetes mellitus; b) Vapor of aerial parts' Inf. / Usage: Sinusitis; c) W. with preparing flowers / Usage: Skin health, and beauty (While taking a shower or having a bath); d) Umbels are boiled |
|---------------------------------------|--|--|

with W., Int. / Usage: Inflammatory diseases, abdominal, and stomach ache; e) Umbels are steeped as tea / Usage: Sore throat, and cold; f) Umbels are boiled with W., Int. / Usage: Kidney diseases; g) Leaves, and flowers are boiled with W., Int., and applied to hair, Ext. / Usage: Hair loss

2.4.1. Documented Use in Literature of *A. cotula*

2.4.1.1. Stress-related: NA

2.4.1.2. Other: a) 80%, and 50% MeOH E, flavonoids rich of flowers: Antimicrobial against Gram +, and – microorganisms [94], b) Anthecotuloide, and 8-*O*-dihydroanthecotuloide from the aerial parts: NF-κB DNA binding activity [95]

2.5. <i>Anthemis cretica</i> L. subsp. <i>albida</i> (Boiss.) Grierson	• Papatya, Biyela,	• <u>Using part</u> : Flowers	[38]
	• Çiviyeçe	• <u>Stress-related</u> : a) After steeping, Inf. / Usage: Relaxant for the body	
• NA	• <u>Other</u> : a) Gargle with chamomile tea / Usage: As mouthwash for the mouth and gingival diseases		

2.5.1. Documented Use in Literature of *A. cretica* subsp. *albida*

2.5.1.1. Stress-related: NA

2.5.1.2. Other: a) 90 % MeOH + 9 % W. + 1 % acetic acid mixture E.: Antioxidant activity [96]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
2.6. <i>Anthemis fumariifolia</i> Boiss. (Endemic)	• Papatya, Yoğurt çiçeği • NA	• <u>Using part</u> : Capitulum • <u>Stress-related</u> : a) Inf. of capitulum, Int. / Usage: Sedative, and fatigue reliever • <u>Other</u> : a) Inf. of capitulum, Int. / Usage: Cold, and flu; b) Inf. prepared with a combination of <i>A. fumariifolia</i> (capitulum), <i>Salvia cryptantha</i> (aerial parts), <i>Medicago rigidula</i> var. <i>rigidula</i> (aerial parts), <i>Thymus sipyles</i> subsp. <i>rosulans</i> (aerial parts), and <i>Astragalus lycius</i> (flowers), Int. / Usage: Reliever for respiratory disorder, expectorant, antitussive, and inflammation of urinary ways	[42]
2.6.1. Documented Use in Literature of <i>A. fumariifolia</i>			
2.6.1.1. <u>Stress-related</u> : NA			
2.6.1.2. <u>Other</u> : a) MeOH E.: Antioxidant via phosphomolybdenum, 2,2-diphenyl-1-picrylhydrazyl (DPPH), and β-carotene-linoleic acid tests, and antibacterial, inactive on <i>C. albicans</i> and <i>Saccharomyces cerevisiae</i> strains by agar-well diffusion assay [97]			
2.7. <i>Anthemis tinctoria</i> L. = <i>Anthemis tinctoria</i> L. var. <i>tinctoria</i>	• Papatya, Beyaz papatya, Papato, Dağ Papatyası, Sarı papatya, juta, Lalitsa • Golden marguerite, Yellow Chamomile	• <u>Using part</u> : Flowers & capitulum • <u>Stress-related</u> : a) 4 or 5 flowers are boiled, and prepared Dec., Int. 1-2 glasses a day / Usage: Sedative; b) Tea / Usage: Stress because of somniferous features; c) Inf. prepared with capitulum, Int. / Usage: Sedative, and fatigue reliever; d) Flowers are steeped like tea / Usage: Relaxant for body	[23, 38, 42, 45]

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- Other: a) 4 or 5 flowers are boiled, and prepared Dec., Int. / Usage: Until to heal; b) 4 or 5 flowers are boiled, and prepared Dec., Int. / Usage: Cold; c) 4 or 5 flowers are boiled, and prepared Dec., then drunk 1-2 glasses of tea / Usage: Diabetes mellitus; d) 4 or 5 flowers are boiled, and prepared Dec., Int., two times a day for cough until getting well (Morning, and evening, full stomach) / Usage: Cough; e) 4 or 5 flowers are boiled, and prepared Dec., Int., 2-3 times a day It can be drunk 1-2 glasses of tea / Usage: Fever; f) 4 or 5 flowers are boiled, and prepared as Dec., Int., 2-3 times a day with a full stomach / Usage: Rheumatism; g) 4 or 5 flowers are boiled, and prepared Dec., Int., 2-3 times a day / Usage: Stomach ache; h) 4 or 5 flowers are boiled, and prepared as Dec. (Int.) 2-3 times a day / Usage: Bronchitis, and asthma, until getting well; i) 4 or 5 flowers are boiled, and prepared Dec., Int., 2-3 times a day / Usage: Tonsillitis; j) 4 or 5 flowers are boiled, and prepared Dec., Int., 2-3 times a day / Usage: Cold; k) Flowers are boiled as a tea / Usage: Bronchitis; l) Dec. prepared with capitulum, Int. / Usage: Cough; m) Gargle with camomile tea / Usage: Mouth, and gum diseases

2.7.1. Documented Use in Literature of *A. tinctoria*= *A. tinctoria* var. *tinctoria*

2.7.1.1. Stress-related: NA

2.7.1.2. Other: a) MeOH E., and its fractions of flowered aerial parts: Antibacterial against Gram+ *S. aureus*; Gram-negative strains *E. coli*, and *P.aeruginosa* [98], b) Semi-purified subfraction rich in labdane sesquiterpenes of flowers: Antitrypanosomal activity against *Trypanosoma cruzi* [99], c) MeOH E.: Antifungal effect against pathogenic, and toxinogenic fungus [100], EtOH E. (intraperitoneally): Antinociceptive (50, 100, and 200 mg/kg) due to its effects in the histaminergic system [101], d) MeOH E, major compounds, 3-hydroxybenzoic acid, and ferulic acid as phenolic acid, morin and quercetin as flavonoids: Moderate aldose reductase inhibitory, anti-platelet aggregation, and anti-blood coagulation activity [102], AChE, BChE, and tyrosinase enzyme inhibition, antioxidant by DPPH and CUPRAC assays [103], e) Inf.: DPPH radical-scavenging activity, antidermatophytic activity against *Trichophyton Rubrum*, and *Epidermophyton floccosum*, antimycobacterial activity against *Mycobacterium tuberculosis* H37Rv, antioxidant activity, good activity against *T. Rubrum* [104]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
2.8. <i>Anthemis tinctoria</i> L. var. <i>pallida</i>	<ul style="list-style-type: none"> • Beyaz papatya, Papatya • Painter's daisy, Yellow daisy 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts, & capitulum • <u>Stress-related:</u> a) Dry flowers' Inf., 1 glass a day / Usage: Sedative • <u>Other:</u> a) Aerial parts' Inf., 1 tea glass a day, Int. / Usage: Abdominal pain; b) Aerial parts' Dec. is waited for 1 day, Int., 1-2 tea glasses a day / Usage: Shortness of breath, and expectorant; c) Aerial parts' Inf., Int., 2-3 tea glasses a day / Usage: Flu, and cold; d) Aerial parts are boiled in W., and its vapor is inhaled / Usage: Sinusitis; 	[39]

e) Dec. of aerial parts with a combination of *Thymus* species / Usage: Blood thinner; f) Flowers' Inf., Int., tea/ Usage: Against menstrual pain; f) Dry flowers' Inf., 1 tea glass a day/ Usage: Back, and headache

2.8.1. Documented Use in Literature of *A. tinctoria* var. *pallida*

2.8.1.1. Stress-related: NA

2.8.1.2. Other: a) Aerial parts' EtOAc, MeOH, and Aq. E.: Antioxidant [93], b) EtOAc, and MeOH E.: Low antimicrobial activity [93], c) AChE, BChE, tyrosinase, α -glucosidase, α -amylase inhibitor with the highest activity on MeOH E. [105]

2.9. <i>Anthemis</i>	• Papatya	• <u>Using part</u> : Flowers	[34]
<i>wiedemanniana</i> Fisch. & Mey	• NA	• <u>Stress-related</u> : a) Dry flowers' Dec. / Usage: Sedative	
		• <u>Other</u> : a) Dry flowers' Dec. / Usage: Edema, cough, and bronchitis	

2.9.1. Documented Use in Literature of *A. wiedemanniana*

2.9.1.1. Stress-related: a) Germacronolide-type sesquiterpene lactones, tatrudin A (1), and tanachin (2) from MeOH E. of flowers: Antidepressant activity in mice by forced swimming test, tail suspension test, and antagonism of tetrabenazine-induced ptosis, hypothermia, and suppression of locomotor activity [106]

2.9.1.2. Other: a) EO.: Antibacterial against Gram+ and Gram-, *E. coli* and *Proteus vulgaris*, strains, high inhibitory effect in nitrite oxide mechanism in RAW-264.7 macrophages, and cytotoxic activity against amelanotic melanoma (C32) and large lung cell carcinoma (COR-L23) cell lines [107]

2.10. <i>Artemisia</i>	• Ariotu	• <u>Using part</u> : Flowers	[10]
<i>absinthium</i> L.	• Wormwood	• <u>Stress-related</u> : a) Flowers' Inf. (7-8 waited) / Usage: Relaxant, and somniferous	
		• <u>Other</u> : NA	

2.10.1. Documented Use in Literature of *A. absinthium*

2.10.1.1. Stress-related: a) MeOH E. of aerial parts: Antidepressant by forced swimming and tail suspension assays in mice, imipramine as a standard, and antioxidant with complementary test [108], MeOH E. showed better antidepressant activity in comparison with polyphenols fraction of E. [109], b) Hydroalcoholic E. of A.P.: Effective on sleeping time and latency by GABA mechanism in mice (Intraperitoneally administration) [110]

2.10.1.2. Other: a) MeOH E.: Neuroprotective via measurement of infarct volume in rat's brain [111, 112], b) Natural sesquiterpene dimer caruifolin D: Anti-neuroinflammatory, neuroprotective effect [113], c) Thujone-free E.: Suppression of tumor necrosis factor- α (TNF- α), and other interleukins in patient's immunoglobulin A (IgA) nephropathy with urine protein-creatinine and blood pressure observation [114], d) Absinthin C, and isoanabsinthin: Inhibitory activities on lipopolysaccharide (LPS)-induced nitric oxide (NO) production in BV-2 cells [115], e) EO. of aerial parts: Stomachic, antiparasitic antiseptic, chlorotic, carminative, anti-inflammatory, cardiac stimulant to improve blood circulation, bactericidal (leaf oil) [116], antimicrobial, antitumor, mutagenic, and antimutagenic without the presence of metabolic activation, antibacterial, antifungal, anticandidal, acaricidal, insecticidal, anthelmintic, antiseptic, antispasmodic [117], antifungal activity (inhibit *C. albicans*, and *Saccharomyces cerevisiae* var. *chevalieri*, and *Microsporium canis*), f) MeOH E. of aerial parts: Anti nemathelminthic activity at a dose of 300 mg/kg found effective against a trichinellosis (*Trichinella spiralis*) in rats (*in vivo*), antiulcer activity (*in vivo*), free-radical-scavenging activity, cognitive enhancement function because of its nicotinic, and muscarinic receptor activity [118], g) *n*-Hexane, Ch., and W.-soluble E.: Antipyretic (*in vivo*) [118], h) Alcoholic E.: Anthelmintic activity (tremocidal effects) [118], i) High phenolic acids, and flavonoid content of EtOH E.: Antioxidant activity (*in vivo*) [118], j) Caffeoylquinic acids contained in E.: Antibacterial activity (*in vivo*) [118], k) Aq. E. rich in caffeoyl, and dicaffeoylquinic acids: Inhibits HIV-1 integrase from integrating the reversibly transcribed viral DNA into host cell DNA, l) Thujone: Intoxicating effect (*in vivo*) [118], m) Sesquiterpene lactones, flavonoids, phenolic acids, and tannins which are contained in Aq. E: Hepatoprotective activity against acute liver injury (*in vivo*) [118], n) Artemisetin: Antitumor activity against melanoma B16 (*in vivo*) [118], o) Flavonoids in the Aq. E.: Osmotic stability of human erythrocytes (*in vitro*), p) Camphor: Antiprotozoal activity against *Trypanosoma brucei*, *Trypanosoma cruzi*, *Leishmania infantum*, *Leishmania donovani*, and *Plasmodium falciparum*, antileishmanial activity against r) Promastigote, and axenic amastigote forms [118], s) Sesquiterpene lactone rich fraction from Aq. E.: Antimalarial activity (inhibited the growth of *Plasmodium falciparum*) [118]

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Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
2.11. <i>Bellis perennis</i> L.	<ul style="list-style-type: none"> Papatya, Babaçya English daisy, Common daisy 	<ul style="list-style-type: none"> <u>Using part:</u> Flowers <u>Stress-related:</u> a) Tea (Steeping) / Usage: Sleeping problems, and sedative <u>Other:</u> a) Tea (Steeping) / Usage: Diuretic, cough, sinusitis, throat, toothache, inflammation, hair health (hair loss, and dandruff), cancer, antitussive, shortness of breath, menstrual, and birth pain; b) 3 numbers of flowers are swallowed / Usage: Malaria disease; c) Flowers are boiled with W. / Usage: Hemorrhoid problem 	[28, 41]
2.11.1. Documented Use in Literature of <i>B. perennis</i>			
<u>2.11.1.1. Stress-related:</u> a) Aq. E. of flowers: Positive, and negative effects on anxiety, and learning performance of albino rats [119], b) EtOH E.: Antioxidant, anxiolytic, and antidepressant-like properties [120]			
<u>2.11.1.2. Other:</u> a) Polyacetylenes of the aerial parts' EO.: Antimicrobial against Gram +, and – bacteria [121], b) Phenolic compounds of the flowers: Antioxidant activity with DPPH scavenging activity assay [122], c) Aq. E.: Hemato-, and nephroprotective in mice [123], d) Apigenin-7- <i>O</i> -glucopyranoside from the flowers: Antioxidant, and AChE inhibitor [124], ointment of EtOH E.'s <i>n</i> -butanol fraction: Wound healer in albino rats [125], e) Aq., and EtOH E.: Antimicrobial, antioxidant, anti-biofilm, and quorum sensing inhibitor, MeOH E. of aerial parts: Antiproliferative activity against MCF-7 cell line (IC ₅₀ 71.6 µg/mL) [126]			
2.12. <i>Cnicus benedictus</i> L.	<ul style="list-style-type: none"> Yumuşak hasan, Şevketibostan, Akdiken, Mayasıl out Blessed Thistle 	<ul style="list-style-type: none"> <u>Using part:</u> Flowered aerial parts, end of shoots, & flowered shoots <u>Stress-related:</u> a) Tea / Usage: Calming nerves <u>Other:</u> a) Inf. / Usage: Eczema; b) After steeping, Inf., they are boiled, Int. / Usage: Kidney stones; c) Tea/ Usage: Fever (Antipyretic) 	[18]
2.12.1. Documented Use in Literature of <i>C. benedictus</i>			
<u>2.12.1.1. Stress-related:</u> NA			
<u>2.12.1.2. Other:</u> a) Cnicin, and polyacetylene: Antimicrobial [127], antibacterial, mild anti-inflammatory [128], b) Arctigenin, and trachelogenin: Inhibitory effects on cyclic AMP, phosphodiesterase, and histamine, antagonist activities against calcium ions, and platelet activation factor [128], cytotoxic activity on tumor cells (HL-60) hepatomas, and sarcomas via inhibition of cellular DNA, RNA or protein synthesis, antiproliferative [129, 130], c) MeOH E. of leaves: Antidiabetic in Streptozocin-induced rats, antinociceptive by hot plate test [131], d) 50% EtOH-W. E. of aerial parts: Antioxidant with DPPH radical-scavenging activity, and reducing power assay, antidiabetic through α -amylase and α -glucosidase inhibitor activities, anti-inflammatory observed on lipoxygenase (LOX) Inhibition test, and nontoxic against fibroblast NCTC cell line [132]			
Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
2.13. <i>Cota austriaca</i> (Jacq.) Sch. Bip., Oesterr. Bot. Wochenbl.	<ul style="list-style-type: none"> Papatya, Beybun, Kulilkakêhvan, Kêhvan, Beybuniç, Beybun, İlouito Austrian chamomile 	<ul style="list-style-type: none"> <u>Using part:</u> Leaves, flowers, aerial parts, & umbels <u>Stress-related:</u> a) Umbels are boiled, and W., Int. / Usage: Sleeping problems, exhaustion, and depression <u>Other:</u> a) Inf. of aerial parts / Usage: Antitussive, cold, flu, asthma, bronchitis, and diabetes mellitus; b) W. with preparing flowers / Usage: Skin health and beauty while during shower or bath; c) Umbels are boiled with W., Int. / Usage: Inflammatory diseases, abdominal, and 	[52]

			stomachache; d) Umbels are steeped as a tea / Usage: Sore throat, cold; e) Umbels are boiled with W., Int. / Usage: Kidney diseases
<p>• Documented Use in Literature of <i>C. austriaca</i>: NA</p>			
<p>2.14. <i>Cota wiedemanniana</i> (Fisch. & C.A. Mey.)</p>	<ul style="list-style-type: none"> • Papatya, Beybun, Kulilkakêhvan, Kêhvan, Beybuniç, Beybun, İloilto • Austrian chamomile 	<ul style="list-style-type: none"> • <u>Using part:</u> Leaves, flowers, aerial parts, umbels • <u>Stress-related:</u> a) Umbels are boiled, with W., Int. / Usage: Sleeping problems, exhaustion, depression • <u>Other:</u> a) Inf. of aerial parts / Usage: Antitussive, cold, flu, asthma, bronchitis, and diabetes; b) Vapor of aerial parts' Inf. / Usage: Sinusitis; c) W. with preparing flowers / Usage: Skin health, and beauty while taking a shower or bath; d) Umbels are boiled, with W., Int. / Usage: Inflammatory diseases, abdominal, and stomach ache; e) Umbels are steeped like tea / Usage: Sore throat, and cold; f) Umbels are boiled with W., Int. / Usage: Kidney diseases; g) Leaves, and flowers are boiled with W., and used both, Int., and applied to hair, Ext. / Usage: Hair loss 	[41]
<p>2.14.1. Documented Use in Literature of <i>C. wiedemanniana</i>: NA</p>			
<p>2.15. <i>Helichrysum plicatum</i> DC (Endemic)</p>	<ul style="list-style-type: none"> • Gündöndü Çiçeği, Ariotu, Ölmezçiçek, Altınçiçeği • Everlasting (General name) 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts • <u>Stress-related, & Other:</u> a) Inf. / Usage: Sedative, diuretic, weight loss, and kidney stones 	[18]
<p>2.15.1. Documented Use in Literature of <i>H. plicatum</i></p>			
<p><u>2.15.1.1. Stress-related:</u> NA</p>			
<p><u>2.15.1.2. Other:</u> a) Flowers, stems, and leaves' EtOAc, and after hydrolysis with HCl E.: Antioxidant on DPPH (1,1-diphenyl-2-picrylhydrazyl) radical, hydroxyl radicals and β-carotene-linoleic acid tests, luteolin, quercetin, BHA, BHT and sylimarin as standards [133], b) EtOH E. of flowers: Relaxant on isolated rat ileum contractions related with acetylcholine, histamine, barium, and potassium ions [134], EtOAc E. of flowers: Cytotoxic activity against PC3, and K562 cell lines [135], c) EtOH, and DCM E.: Antioxidant, only DCM E., antimicrobial against <i>P. aeruginosa</i> higher than chloramphenicol [136]</p>			
Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
<p>2.16. <i>Inula britannica</i> L.</p>	<ul style="list-style-type: none"> • Çayır andızı • British yellowhead 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts • <u>Stress-related, & Other:</u> a) Tea / Usage: Antistress, fatigue, respiratory diseases, kidney stones, and hairloss, Ext. 	[46]
<p>2.16.1. Documented Use in Literature of <i>I. britannica</i></p>			
<p><u>2.16.1.1. Stress-related:</u> a) Aq., and MeOH E.: Antiepileptic activity by maximal electroshock (MES) especially Aq. E., and non-active on pentylenetetrazole (PTZ) assay on male albino mice, diazepam as a standard, and evaluation of sedative and hypnotic effects were evaluated using open field and righting reflex assays [137],</p>			
<p><u>2.16.1.2. Other:</u> a) Flavonoid-rich E.: Oxidative-stress reducer in cultured vascular smooth muscle cells (VSMCs) of rats with TNF-α decreasing, and p47phox gene expression [138], 10 (5 new, 5 known) sesquiterpene lactones of EtOH E.' fraction, EtOAc of flowers: Modest cytotoxic against NCI-H460, DLD1, and U87, COR-L23 and COR-L23/Resistant cell lines [139], b) MeOH E. of flowers: Antimicrobial against MRSA through mecA, mecI, and mecRI in mRNA gene resistance [140], c) Semisynthetic derivative, 6-OH of 1-O-acetylbritannilactone from EtOH E.: Cytotoxic against HCT116 (<i>in vitro</i>) through apoptotic pathway with induction of cell cycle arrest in G2/M phase [141], d) EtOH E. of flowers: Melanin synthesis inhibitor in melanoma cells through tyrosinase expression</p>			

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suppression, natural skin-lightening activity [142], e) MeOH, and EtOH E.: Antibacterial against *Helicobacter pylori* strains (26695, J99, and SS1) [143], f) Aq. E. at 500 µg/mL of aerial parts, and roots: Antioxidant with the evaluation of f hydrogenperoxide and paraquat parameters, and antigenotoxic on *E. coli* MG1655 through evaluation of luminescence in the bioluminescent assay, 4-nitroquinoline-1-oxide and dioxidine as standards [144], g) 1β-hydroxyalantolactone from 95% EtOH E., and its semisynthetic derivatives: Anti-inflammatory through phosphorylation of p65 and p50 inhibition in TNF-α-induced NF-κB [145], h) EtOH E. and its pure compounds, 1 (new), and japonicone B: Human Neutrophil Elastase activity (8.0 and 22.8 µM, respectively), epigallocatechin gallate as a positive control [146], i) EO, and major compound, patuletin: Good antinociceptive activity determined with tail-flick, writhing tests, formalin induced paw licking model, glutamate-induced paw licking test, opioid receptor observation, L-Arginine/NO pathway, cGMP pathway, KATP channels, and locomotor activity assays [147], j) Aq. E. of flowers: Anti-adipogenic activity through 3T3-L1 preadipocytes mechanism, beneficial for obesity [148]

<p>2.17. <i>Matricaria chamomilla</i> L.= <i>Matricaria chamomilla</i> L. var. <i>recutita</i> (L.) Fiori</p>	<ul style="list-style-type: none"> • Papatya, Bopatça, Bubatçe, Papatça, Papatya, Keloğlançiçeği, Beyazpapatya • Chamomile, Chamomilla, German chamomile, Hungarian chamomile, Pinheads, Single chamomile, Wild chamomile 	<ul style="list-style-type: none"> • <u>Using part:</u> Flowers, leaves, aerial parts & capitulum [11, 25, 27, 39] • <u>Stress-related:</u> a) Flowers are steeped in W., tea, Int. / Usage: Tranquilizer, sedative, for sleeplessness; b) Dry Flowers' Inf., 1 glass a day / Usage: Sedative • <u>Other:</u> a) Inf. / Usage: Antidiabetic, anti-inflammatory, painkiller, abdominal pain, headache, sinusitis, urinary infection, cold, Int., burns, scars, leg pain Ext., rheumatic pain, and allergic skin reactions, and bath, b) Aerial parts' Inf., 2 tea glasses a day / Usage: Abdominal pain; c) Aerial parts' Dec. / Usage: Knee pain; d) Dry aerial parts' Inf., 2 tea glasses a day / Usage: Anti-inflammatory, and diuretic; e) Dry aerial parts is waited for 15 minutes in hot W., Mouthwash, 2-3 times a day / Usage: Gum problems; f) Dry flowers' Inf. / Usage: Fewer diseases, it's not recommended for pregnant; g) Dry fowers' Dec. / Usage: Constipation
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2.17.1. Documented Use in Literature of *M. chamomilla*

2.17.1.1. Stress-related: a) Apigenin (**23**): Mild sedative, antidepressant, and anticonvulsant effect, good for insomnia (clinical study) [149, 150, 151, 152], b) 100 mg Levomenol, 96% EtOH E., and EO. 0.19 g, 3 times a day: Alleviative in hyperactivity of male adolescents measured by Connors' parent ratings parameter [153], c) 50% EtOH E.: Beneficial to amnesia in scopolamine-induced rats with y-maze, radial-arm maze assays, antioxidant in the hippocampus of rats [154], antianxiety by elevated plus maze assay, and antidepressant with forced swimming assay in rats induced by scopolamine [155], c) 70% EtOH E. with the ingredient standardization (1.2 % apigenin-7-O-glucoside (**25**), and 0.2–0.6% tetra coumaroyl spermine (TCS) (**26**). (500 mg in capsule): Short, and long term anxiolytic (generalized), and antidepressant through clinical trials for 8 weeks with 1500 mg daily dose [156, 157, 158, 159], antidepressant on forced swimming test in mice, imipramine as a standard [160]

2.17.1.2. Other: a) Apigenin (**23**): Induces apoptosis through proteasomal degradation of HER2/neu in HER2/neu-overexpressing breast cancer cells via the phosphatidylinositol-3'-kinase/Akt-dependent pathway, upregulate of insulin-like growth factor binding protein-3 (leads to growth inhibition, and apoptosis of 22Rv1 xenograft in athymic nude mice) [161], antieczema, anti-osteoporosis [162], b) α-bisabolol (**24**): Promising inducer of apoptosis in highly malignant glioma cells [163], c) Chamomile oily E.: *In vitro* anti-*Helicobacter pylori* activity, effective in stomach diseases, and peptic ulcer [164], phosphodiesterase inhibitory action, which leads to increased cAMP levels [165], d) Aq. E.: Because of selective estrogen receptor modulator activity, induce osteoblast differentiation, and have anti-cancer effects on breast cancer, and uterine cancer cells *in vitro* (concentrations of 10-100 µg/mL) [165], e) Hydroalcoholic E.: Decreasing spermatozoa count, and motility, spermatozoon tail length, serum testosterone level, and increase serum estradiol level [166], f) Aq.-MeOH E.: Antidiarrhoeal, antisecretory, and

antispasmodic activities [167], g) EtOAc, Ch. fractions, PE., and Aq. EtOH residue: Antiulcer [168], h) Bevacizumab, and the hydroalcoholic E.: Inhibitory on NO production by HT-29 cell line [169], i) EtOH E.: Analgesic cyclooxygenase (COX) inhibitors (α -bisabolol (**24**), bisabolol oxide A, and guaiazulene) both *in vivo* antinociceptive tests in rats, and molecular docking *in silico* tests [170], j) Diclofenac, indomethacin, and EtOH E.combinations: Anti-inflammatory effect on carrageenan induced paw inflammation, and gastric injury in rats [171]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
2.18. <i>Tanacetum parthenium</i> (L.) Sch. Bip	<ul style="list-style-type: none"> • Papatya, Gümüşdüğme • Feverfew, Bachelor's Button, Bridal Roses, Camphor Geranium, Common- Double-European- Lesser, Feverfew, Feather-Fully, Febrifuge Plant, Feather Foil, Fetter-Foe, Chrysanthemum-Chamomile, Wild-C., C.-Grande, Flirtroot, Flitwort, Golden Feather, Matricaria Parthenium, Midsummer Daisy, Mother Herb, Nosebleed Parthenium, Pellitory, Santa Maria, White-Wort, Wild Quinine, Eddygen Fenyw, Mutterkraut, Vetter-Voo, Featherfew, Altamisa, Featherfoil, Febrifuge Plant, Nose bleed, Chrysanthemum Atricaire, Federfoyl 	<ul style="list-style-type: none"> • <u>Using part:</u> Flowers • <u>Stress-related:</u> a) Tea of flowers / Usage: Sedative • <u>Other:</u> NA 	[33]

2.18.1. Documented Use in Literature of *T. parthenium*

2.18.1.1. Stress-related: NA

2.18.1.2. Other: a) EtOAc fraction and apigenin (**23**) from aerial parts: Antiepileptic through GABAA-benzodiazepine test [172], b) Parhenolide: Antileishmanial [173], cytotoxic on COLO205 colon-colorectal through Bcl-2 proapoptotic mechanism, acute myelogenous leukaemia, glioblastoma cells with caspase 3-7 receptors, anti-tumorigenic, NF- κ B- and STATs-mediated antiapoptotic gene transcription inhibitor with amplified the apoptotic signal, and extrinsic apoptosis [174], anti-inflammatory, anti-tumor [175], and antiviral against *Herpes simplex* type 1 [176], c) E. without parthenolide: Anti-inflammatory with TNF- α induced-NF- κ B, 5-lipoxygenase, phosphodiesterase-3 and phosphodiesterase-4 inhibition [177], d) W. related formulation ginger/feverfew preparation, as sublingual: Effective on acute migraine through a multi-center pilot study with 60 patients, and questionnaire [178], supercritical extract contained mainly sesquiterpene lactone, parthenolide, few amounts of santamarin and reynosin: Antimigraine activity through inhibition of nitric oxide and TNF- α synthesis in mice [179], e) Hydroalcoholic E. of aerial parts: Antiviral *Herpes simplex* type 1, KOS strains, and in infected animals (Oral and topical, wound healer on L-929 (*in vitro*), non-toxic, non-genotoxic, non-irritate [180], f) Ferulic acid, apigenin, luteolin-7-*O*-glucoside, luteolin, chrysofenol, and kaempferol of 70% MeOH E.: Rat lens aldose reductase activity antioxidant with DPPH radical scavenging activity, and reduce sorbitol accumulation in rat lenses ferulic acid, luteolin-7-*O*-glucoside, and luteolin: Advanced glycation endproducts inhibitor [181], g) W.-EtOH E., and its *n*-butanol, Aq. fractions: Alleviate brain oxidative damage in pentylenetetrazole (PTZ)-induced seizures mice at medium dose of E. and an *n*-butanol fraction [182]

Anti-stress medicinal plants

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
2.19. <i>Tripleurospermum callosum</i> (Boiss. & Heldr.) E. Hossain (Endemic)	<ul style="list-style-type: none"> • Göde • NA 	<ul style="list-style-type: none"> • <u>Using parts:</u> Flowers, & leaves • <u>Stress-related:</u> a) Tea / Usage: Sedative, and shooting • <u>Other:</u> a) Boiled with W. and filtered, then let sit to cool down. 1 glass a day, Int. / Usage: Shortness of breath; b) Tea / Usage: Hair health, prevention of cold in winter times after collection of flowers in the spring season, and dryness, and kidney stones 	[41]
2.19.1. Documented Use in Literature of <i>T. callosum</i>: NA			
2.20. <i>Tripleurospermum parviflorum</i> (Willd.) Pobed.	<ul style="list-style-type: none"> • Sarı Papatya, Yalancı Papatya, Beybunık • NA 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts • <u>Stress-related:</u> a) Dry flowers' Inf., 15 minutes steeping) / Usage: Sedative • <u>Other:</u> NA 	[49]
2.20.1. Documented Use in Literature of <i>T. parviflorum</i>			
<u>2.20.1.1. Stress-related:</u> NA			
<u>2.20.1.2. Other:</u> a) <i>n</i> -Hexane, MeOH, EtOH, EtOAc, and W. E.: Antimicrobial against <i>E. coli</i> , <i>S. aureus</i> , <i>Enterobacter cloacae</i> , <i>Enterococcus faecalis</i> , <i>P. aeruginosa</i> as bacteria, and <i>C. albicans</i> as fungi, brine shrimp for toxic evaluation (<i>in vitro</i>) [183], b) EtOAc E.: Anti-inflammatory in albino mice with carrageenan, serotonin, acetic acid-induced hind paw edema assays (<i>in vivo</i>) [184]			
3. Boraginaceae			
3.1. <i>Anchusa azurea</i> Miller	<ul style="list-style-type: none"> • Sığirdili • Bugloss 	<ul style="list-style-type: none"> • <u>Using part:</u> Purple flowered shoots • <u>Stress-related:</u> a) Dec. / Usage: Psychological distress • <u>Other:</u> NA 	[9]
3.1.1. Documented Use in Literature of <i>A. azurea</i>			
<u>3.1.1.1. Stress-related:</u> NA			
<u>3.1.1.2. Other:</u> a) Phenolic compounds, and flavonoids: Antioxidant [185], because of protective in oxidative stress, useful in cancer, atherosclerosis, aging, ischemic injury, inflammation [186], antinociceptive, cold, diaphoretic, and anti-inflammatory [187]			
4. Brassicaceae			
4.1. <i>Cardaria draba</i> (L.) Desv. subsp. <i>draba</i>	<ul style="list-style-type: none"> • Kedi Otu, Çok Yıllık Kır Teresi, Yabani Tere • NA 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts • <u>Stress-related:</u> a) Tea / Usage: Calming nerves • <u>Other:</u> NA 	[49]
4.1.1. Documented Use in Literature of <i>C. draba</i> subsp. <i>draba</i>			
<u>4.1.1.1. Stress-related:</u> NA			
<u>4.1.1.2. Other:</u> a) MeOH and Ag. E.: Antioxidant on cupric reducing antioxidant capacity, ferric reducing antioxidant power and phosphomolybdenum tests (MeOH), as well as, DPPH, ABTS scavenging, and β -carotene assays (Aq. E.) [188]			
Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
4.2. <i>Nasturtium officinale</i> L.	<ul style="list-style-type: none"> • Suteresi • Watercress 	<ul style="list-style-type: none"> • <u>Using part:</u> Whole plant • <u>Stress-related:</u> a) Tea / Usage: Calming nerves • <u>Other:</u> a) Tea, and raw leaves, and flowers with salt are eaten / Usage: Diuretic, aphrodisiac, protective against tonsillitis (Tea, Int.), 	[27]

strengthens the body, appetizer (raw leaves, and flowers, Int.)

4.2.1. Documented Use in Literature of *N. officinale*

4.2.1.1. Stress-related: NA

4.2.1.2. Other: a) Abortion, antihypertensive, diabetes disease, digestive, jaundice in children [189], b) E. and phenolic compounds (leaves): Potent antioxidant properties are probably mediated through direct trapping of free radicals, reducing power, and metal chelating [190, 191], high hypolipidemic activity [192], c) Leaves' juice: Protective against the three stages of the carcinogenesis process, inhibit invasion of HT115 cells through matrigel. Caused an accumulation of cells in the S phase of the cell cycle indicating cell cycle, and inhibited DNA damage induced by two of the three genotoxins used, namely hydrogen peroxide, and fecal W., indicating the potential to inhibit initiation [193], d) Ch. E. (aerial parts), *E*-phytol and palmitic acid: Activity against to *Mycobacterium tuberculosis* H37Rv strains [194], e) Glucosinolates in Aq., and MeOH E.: Protective effect against nephrotoxicity through antioxidant, and anti-inflammatory activity in rats [195, 196], f) Aq. E.: Hypoglycemic and oxidative stress effect on hyperglycemic rats. Decrease glucose levels, and increase the number of β -cells [197], g) Encapsulated MeOH E. (fresh aerial parts): Cytotoxic activity in lung cancer cell lines (A549), higher than regular MeOH E. of the plant material [198]

5. Cannabinaceae

- | | | |
|---------------------------------------|--|---|
| 5.1. <i>Cannabis sativa</i> L. | <ul style="list-style-type: none"> • Kenevir, Kendir • Hemp, Marijuana | <ul style="list-style-type: none"> • <u>Using part</u>: Aerial parts [35] • <u>Stress-related</u>: a) Tea / Usage: Sedative, to make naughty boys sleep • <u>Other</u>: NA |
|---------------------------------------|--|---|

5.1.1. Documented Use in Literature of *C. sativa*

5.1.1.1. Stress-related: a) Cannabidiol (CBD) (**27**): Anxiolytic, effective on the sleep-wake cycle of rats, antitumor effect through growth mechanism, appetizer for AIDS patients [199], antidepressant not active on, CB1 and CB2 receptors, but HT1A receptor [200], effective on seizures of Lennox-Gastaut syndrome, and Dravet syndrome for 2-year-old and older [201], anti-psychoactive [199], b) Δ^9 -Tetrahydrocannabinol (THC) (**28**): Psychoactive effect [199]

5.1.1.2. Other: a) Inflorescence of raw hemp of E., and decarboxylated E.: Neuroprotective, and trophic on SHSY5Y cell lines [202], CBD (**27**), and its synthetic analogs: Antioxidant, anticancer, and neuroprotective for epilepsy and Alzheimer's disease [203], phytocannabinoids: For nausea, and severe pain in chemotherapeutic patients, antiepileptic [204], b) Cannabis E., THC/CBD: Anticancer [205], c) E. includes 64.5% CBD (**27**), 4% THC (**28**), and less than 4% the other cannabinoids: Induce neuropathy, and alleviate neuropathic pain (STZ injection, GSH, GSSG, MDA, NGF assays) [206], d) α -Humulene, β -caryophyllene, and caryophyllene oxide from *n*-hexane E: α -Humulene has significant antifungal activity against *Cryptococcus neoformans*, (α -Humulene > β -caryophyllene (low) > caryophyllene oxide (none)) [207]

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|---------------------------------------|--|---|
| 5.2. <i>Humulus lupulus</i> L. | <ul style="list-style-type: none"> • Şerbetçiotu • Hop | <ul style="list-style-type: none"> • <u>Using part</u>: Flowers (Female), & leaves [35, 50] • <u>Stress-related, & Other</u>: a) Inf. / Usage: Nervous system stimulant, good sleeping pill, not good for depressive people, appetizer, for stomach indigestion, edema reliever, sedative |
|---------------------------------------|--|---|

5.2.1. Documented Use in Literature of *H. lupulus*

5.2.1.1. Stress-related: a) Humulone (**30**): Sedative-hypnotic activity through GABAA receptor in mice [208], 70% EtOH E. of female flowers (pellet): Effective on sleeping cycle through GABA_A receptors in mice [209]

5.2.1.2. Other: a) Prenylflavonoids, prenylated chalcone (Xanthohumol), 8-prenylnaringenin: Phytoestrogen [210, 211], inhibit aromatase activity [212, 213], b) Prenylflavonoids, bitter acids: Cancer chemopreventive, EO., and chloroform E., bitter acids: Antibacterial, and antifungal, Aq. E.: Stomachic [210], c) 2'-O-methyl-3'-prenylchalconaringenin, xanthohumol: Antioxidant [214], xanthohumol (0.2, and 0.4 mg/kg; intraperitoneally): Neuroprotective activity in cerebral ischemic rats [215], d) CO₂ E.: Selective COX2 inhibitor, alcoholic E. (4, and 8 mg/mL): Antimicrobial against to rifampin sensitive, and resistant, *Mycobacterium tuberculosis* isolates [216], prenylated phenols: P450 enzymes inhibitor [217], xanthohumol (prenyated chalcone): Cholesteryl ester transfer protein inhibitor, increase high density lipoprotein (HDL)-cholesterol levels [218], e) Xanthohumol: Inhibit adipogenesis (increase cell apoptosis, may be used for obesity), hypoglycemic, hypolipidemic (triglyceride inhibition), chemopreventive, anti-inflammatory, antimicrobial, anti-Parasite [219], f) Xanthohumol, and 4-hydroxycolupulone: microsomal prostaglandin E2 synthase inhibitor [220]

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Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
6. Caprifoliaceae			
6.1. <i>Valeriana dioscoridis</i> Sm.	<ul style="list-style-type: none"> • Düllüdamak, kediotu • Valerian 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts • <u>Stress-related:</u> a) Tea / Usage: Calming nerves • <u>Other:</u> a) Aerial parts, Int. / Usage: Wounds, and spasmolytic 	[27]
6.1.1. Documented Use in Literature of <i>V. dioscoridis</i>			
6.1.1.1. <u>Stress-related:</u> a) Valerenic acid (15) in valepotriates: Effective on anxiolytic through GABA modulator, GABA _A receptor agonist, 5-HT ₅ partial agonist properties, as well as good for insomnia, and CNS stimulant [221]			
6.1.1.2. <u>Other:</u> a) W. E.: Antioxidant [90], and antifungal [222], b) <i>n</i> -Hexane and Ch. E. of roots: Cytotoxic activity against HepG2 with the concentration 128.4 and 86.93 µg/mL, insecticidal activity against mosquitoes with 96.7% [223]			
6.2. <i>Valeriana officinalis</i> L.	<ul style="list-style-type: none"> • Kediotu • Valerian 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts, roots, & leaves • <u>Stress-related:</u> a) Inf., tea / Usage: Sedative, good for depression, and insomnia without addiction • <u>Other:</u> NA 	[49, 50]
6.2.1. Documented Use in Literature of <i>V. officinalis</i>			
6.2.1.1. <u>Stress-related:</u> a) E. (Terpenoids, valepotriates, and lignans) of roots: Effective on anxiety, sleeping disorders, cardiovascular diseases, depression as a sedative and anxiolytic activities through GABA-ergic transmission [224], b) 900 mg valerenic acid (15) (0.8%) daily intake (clinical trial with fifteen volunteers): Modulator of cortical excitatory circuits of the human through evaluation of TMS assay (transcranial magnetic stimulation) [225], valerenic acid (15), and acetoxyvalerenic acid (16) are also tested for their antidepressant effects through brain-derived neurotrophic factor (BDNF) levels in SH- SY5 cell lines and they are found effective on this mechanism which is connected with Valerian's antidepressant activity [226], c) Syrup of roots: Effective in insomnia in patients who have chronic heart failure and sleeping problems by making questionnaires of the patients through uses of demographic data and Pittsburgh Sleep Quality Index (80 patients, clinical trials for 1 month one hour before sleep, alprazolam as a standard) [227], d) Aq. E. of roots: Anxiolytic activity in male mice (buspirone as a standard) by arrivals and elapsed time in open arms maze tests [228], as well as antioxidant, antiepileptic through protective effect against pesticide rotenone cytotoxic effect on C6 glioma cell lines (<i>in vitro</i>), as well as the antidepressant effect in rats' brain (<i>in vivo</i>) [229], e) Aq. E. (roots): Effective on the expression of GABRB3 (GABA _A receptor β3 subunit) receptor's mRNA in mice, thus sedative and effective in insomnia [230]			
6.2.1.2. <u>Other:</u> a) Valerian E. (EtOH, and Aq.), and valepotriates: Muscle relaxant, inhibitor on uterine contractility in a concentration-dependent manner on uterine of the non-pregnant muscle of human [231], b) EO. of roots (Patchoulol 16.75%, α-pinene (10) 14.81%, and β-humulene 8.19%, major compounds): Antioxidant by DPPH, β-carotene bleaching, and ferrozine-ferrous ions tests, antimicrobial (broad-spectrum antibacterial, and inhibitory activity of spore germination against <i>Magnaporthe oryzae</i> , and antifungal against <i>C. albicans</i>) [232], as well as the plant material has moderate AChE inhibitory activity (<i>in vitro</i>) [233], c) 20% and 70% EtOH E. of roots: Effective on learning memory of rats which have sleeping disorders and Alzheimer's disease (<i>in vivo</i>) [234], d) Sedamin capsule, 530 mg of E. (roots): (1 month clinical trial with 2 capsules a day after dinner, double-blind placebo-controlled), effective on headaches which are caused by hypertension [235], 8-hydroxy-pinorensinol-4- <i>O</i> -β-D-glucoside: Beneficial for arrhythmia as Kv1.5 channel blocker [236]			
Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
7. Cornaceae			
7.1. <i>Cornus mas</i> L.	<ul style="list-style-type: none"> • Kızılcık, Gürenler • Chornellian cherry 	<ul style="list-style-type: none"> • <u>Using part:</u> Fruits • <u>Stress-related:</u> a) Fruits which are gathered in the 2nd week of September are boiled in 1 tea glass of warm W. until the seeds are separated from the pulp. As the following step, the cooking procedure goes on for 	[20]

more than 10-15 minutes after fruits are mashed. Finally, powdered essence of lemon is added to the mash and frozen in a deep freezer / Usage: Anti-stress, and for panic attack patients

- **Other:** a) Fruits / Usage: Anticoagulant, protector against cancer risk, antibacterial against respiratory tract, and urinary tract infections, cardiovascular disease, cholagogue, and antirheumatismal

7.1.1. Documented Use in Literature of *C. mas*

7.1.1.1. **Stress-related:** NA

7.1.1.2. **Other:** a) WE.: Antioxidant, active on free radical, superoxide anion radical, hydrogen peroxide scavenging, and metal-chelating pathways [237], b) Anthocyanins and ursolic acid (**18**) isolated from fruits: Beneficial to obesity and insulin resistance in fat mice [238], c) Freeze-dried cornelian cherry fruits: Neuroprotective effect on Wistar rats with paraoxonase enzyme arising both in plasma, and brain tissue [239], d) Acetone E.: Anti-inflammatory effects through suppression of serum cytokines, and antioxidant [240], acetone:W.: acetic acid (80:19.5:0.5) E. of fruits: Moderate endothelium-dependent vasorelaxant activity through endothelial nitric oxide synthase activation, and arginase inhibition, (non-toxic in brine shrimps) [241], e) Combination of silver and gold nanoparticles complexed with polyphenols-rich fruits: Reducer of IL-12 and TNF- α which is effective on psoriasis [242], f) 80% MeOH E. of fruits: Reducer of ulcerative colitis in rats (14 days treatment, orally) [243], g) WE., rich from iridoids and ellagitannins, of leaves: Antimicrobial especially against *Moraxella osloensis* strains [244], cytotoxic activity with IC₅₀ = 0.60% value against colon adenocarcinoma, Caco-2, cell line [245]

8. Cucurbitaceae

8.1. *Cucumis sativus* L.

- Hıyar, Salatalık
- Cucumber

- **Using part:** - [27]
- **Stress-related:** a) Tea / Usage: Calming nerves
- **Other:** a) Tea / Usage: Cleaning the kidneys, kidney stones, gravel, blood, for skin, and diuretic

8.1.1. Documented Use in Literature of *C. sativus*

8.1.1.1. **Stress-related:** NA

8.1.1.2. **Other:** a) E. (fruits): Free radical scavenging, and analgesic (flavonoids, and tannins), antioxidant (lactic acid) [246], potential antidiabetic, lipid lowering, cleansing action within the body by removing accumulated pockets of old waste materials, and chemical toxins, fresh fruits juice: Using for nourishing the skin, soothing effect against skin irritations, and reduces swelling, relax, and alleviate the sunburn's pain, fruits: Refrigerant, haemostatic, tonic, and useful in hyperdipsia, thermoplegia, seeds.: Cooling effect on the body, prevent constipation [247], b) MeOH E. (leaves): Anti-inflammatory [248], c) Aq. E. (fruits): Decrease the oxidative stress, and carbonyl stress [249]

9. Cupressaceae

9.1. *Juniperus oxycedrus* L.

- Pardı üzümü, andız meyvesi
- Prickly juniper, prickly cedar, cade juniper, cade, sharp cedar

- **Using part:** Fruits [40]
- **Stress-related:** a) Fruits are swallowed / Usage: Nocturnal enuresis, and sedative
- **Other:** a) Fruits' Inf., and Dec., Int. / Usage: Abdominal pain, cough (expectorant), cataract, hemorrhoid, and cold; b) Juniper tar / Usage: Amenorrhea, anal fistula, cold, cough, and asthma
- c) Juniper tar is mixed with flour, Int., sometimes directly or its ointment is applied into the skin, 1 portion of juniper tar, and 9 portions of vaseline mixture, Ext. / Usage: Hemorrhoid, and in some skin

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diseases; d) Dec. of fruits, and leaves or E.O. / Usage: Diuretic, kidney stones, hemorrhoid, and bronchitis; e) Crashed fruits are mixed with flour, boiled, Ext. / Usage: Abdominal swelling; f) Roots resin / Usage: Wound healing; g) Fruits' Dec., Int., Ext., and as hot vapor / Usage: Cold, fungus infection, Int., and Ext., hot Dec.'s vapor is used for some gynecologic diseases, and hemorrhoid treatment; h) Juniper tar, and bulb W., cooked with egg yolk, and soap, Ext. / Usage: Maturing abscesses, cicatrizing; i) Fruits, and leaves' Dec., Int., Ext., during the bath, and Juniper tar, Ext. / Usage: Rheumatism, Int., Dec., parasite diseases, bath, bone fractures, juniper tar, Ext.; j) Fruits boiled with milk and wrapped onto skin, or its Inf., Dec. as skin patch / Usage: Abdominal pain, internal diseases, shortness of breath, respiratory problems, and blood pressure regulator

9.1.1. Documented Use in Literature of *J. oxycedrus*

9.1.1.1. Stress-related: NA

9.1.1.2. Other: a) Aq., and MeOH E.: Antimicrobial, reduce blood pressure, histamine, serotonin, and acetylcholine inhibitor, anti-inflammatory [250], b) Aq. E. (leaves), EO., α -pinene (**10**) (Branches): Antioxidant on DPPH assay [251, 252], c) EO. (Fruits), α -pinene (**10**), and β -myrcene (**14**): Anti-tumor effect as an adjuvant on estrogen receptor-positive (ER+) breast cancer cell lines through apoptosis induction [253]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
10. Ericaceae			
10.1. <i>Calluna vulgaris</i> (L.) Hull.	<ul style="list-style-type: none"> • Funda • Heather 	<ul style="list-style-type: none"> • <u>Using part</u>: Aerial parts • <u>Stress-related</u>: a) Inf. / Usage: Alzheimer's disease, and calming nerves • <u>Other</u>: a) Inf. / Urine inflammation, kidney diseases, losing weight, fat burner, good for cholesterol illness, and intestinal system activator; b) Ointment with olive oil / Usage: Eczema 	[50]

10.1.1. Documented Use in Literature of *C. vulgaris*

10.1.1.1. Stress-related: a) Hydroethanolic E. (*in vivo*): Antidepressant activity in mice by Tail suspension, and Parsolt's assays [254]

10.1.1.2. Other: a) Hydroethanolic E. (*in vivo*) (topical): Chemopreventive against UVB induced skin damage in mice, and also on vascular endothelial cells, antioxidant (free radical scavenging activity) (DPPH assay), modulate NF- κ B/ERK signaling pathway, and matrix metalloproteinase expression [255, 256, 257, 258], b) EtOAc fractions, kaempferol-3-O- β -D-galactoside (*in vivo*): Anti-inflammatory, and antinociceptive in mice [259], photoprotective in human keratinocytes [260]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
10.2. <i>Erica manipuliflora</i> Salisb.	<ul style="list-style-type: none"> • Piren, Püren • Heather (General name) 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts • <u>Stress-related:</u> a) Inf. / Usage: Sedative, • <u>Other:</u> NA 	[24]
10.2.1. Documented Use in Literature of <i>E. manipuliflora</i>			
10.2.1.1. <u>Stress-related:</u> NA			
10.2.1.2. <u>Other:</u> a) <i>n</i> -Butanol E. fractions, one is rich from flavonoids, phenylethanoid glycosides, and the other one is triterpenoid saponins-rich fractions: Antibiofilm activity against marine biofilm bacteria, <i>Pseudoalteromonas</i> , <i>Alteromonas</i> , <i>Exiguobacterium</i> , and <i>Vibrio</i> species [261], b) EtOAc E. of A.: Anti-inflammatory in carrageenan-induced, 29.2–35.1%, PGE2-induced, 6.2–34.1%, hind paw edema, and TPA-induced mouse ear edema in mice; antinociceptive activity in p-benzoquinone-induced abdominal constriction assay, 36.3% [262], c) Aerial parts, collected in flowering time and the fruit time, EtOH E. of both flowering and fruit times, and PE. of fruit time: Cytotoxic against HepG2 cell lines [263], EtOAc E. of flowers and leaves: Antioxidant with 45.61, and 48.16 µg/mL IC50 values, lower than standard, β-carotene-linoleic acid, EO. of leaves: Modest anticholinesterase activity with 73.82 µg/mL IC50 value [264]			
11. Fabaceae			
11.1. <i>Melilotus indica</i> (L.) All.	<ul style="list-style-type: none"> • Sarı yonca • Yellow sour clover, Yellow sweet clover 	<ul style="list-style-type: none"> • <u>Using part:</u> Flowers, & leaves • <u>Stress-related:</u> a) Inf. / Usage: Sedative • <u>Other:</u> NA 	[11]
11.1.1. Documented Use in Literature of <i>M. indica</i>			
11.1.1.1. <u>Stress-related:</u> NA			
11.1.1.2. <u>Other:</u> a) Hydroalcoholic E.: Antinociceptive, <i>in vivo</i> , formalin test, and anti-inflammatory, <i>in vivo</i> cotton pellet- induced granuloma formation assay, both in mice [265], b) MeOH E. of leaves: Antimicrobial against Gram+ <i>S. aureus</i> , while resistant against Gram - <i>E. coli</i> , EtOH E.: Dose-dependent antioxidant [266], c) MeOH E. of aerial parts: Cytotoxic activity through mitochondrial-mediated apoptotic pathway against HepG2, and SNU-182 not in normal hepatic L-02 cell lines [267]			
11.2. <i>Vicia tetrasperma</i> (L.) Schreb.	<ul style="list-style-type: none"> • Mavikantaron • Four seeded vetch 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts • <u>Stress-related:</u> a) Inf. / Usage: Sedative • <u>Other:</u> a) Inf. / Usage: Analgesic 	[11]
11.2.1. Documented Use in Literature of <i>V. tetrasperma</i>: NA			
12. Hypericaceae			
12.1. <i>Hypericum atomarium</i> Boiss.	<ul style="list-style-type: none"> • Sarıkantaron, Mideotu • NA 	<ul style="list-style-type: none"> • <u>Using part:</u> Roots, & flowers • <u>Stress-related:</u> a) Flowers' Dec. / Usage: Sleep withdrawal (insomnia), and fatigue • <u>Other:</u> a) Roots' Dec., a cup of tea, daily / Usage: Gastrointestinal diseases; b) Powder of flowers / Usage: Scatrizan 	[19]
12.1.1. Documented Use in Literature of <i>H. atomarium</i>			
12.1.1.1. <u>Stress-related:</u> NA			
12.1.1.2. <u>Other:</u> a) Ch., W., and MeOH E.: Antibacterial against <i>S. aureus</i> , <i>S. hominis</i> , <i>S. haemolyticus</i> , <i>S. epidermidis</i> with 20,7-16 mm diameter inhibition [268]			
12.2. <i>Hypericum perforatum</i> L.	<ul style="list-style-type: none"> • Su kantaronu, Kırmızı kantaron, Mideotu, Gantarotu (Kızık), Kantarot, Koyunkıran, Kuzukıran (Yenimahalle), Ada çayı, Alaçayıotu, Kanter çiçeği, Çayotu, Kangıran, 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts, flowers, leaves, branches, & fresh stems • <u>Stress-related:</u> a) Dry aerial parts with flowers' Inf. / Usage: Calming nerves, depression, some neural disease, sleep withdrawal, and restiveness; b) Flowers' Dec., Int. / Usage: Good for sleep withdrawal, and fatigue; c) The liquid obtained by 	[9, 12, 15, 19, 25, 27, 29, 31, 33, 39]

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-
- Kangranotu,
Kantarod,
Kantarönçayı,
Kantiron, Kanturon,
Kılıçotu, Koramanotu,
Koramaz, Kuzukıran,
Sancıotu, Sarıpatya,
Tentürdiyot çiçeği,
Yara otu, Yara
yaprağı, Kantariyon,
Kantur çiçeği, Sariot,
Jaltkantaron,
Yakıotu, Kızılarslan,
Bulut, Ülserotu,
Koyunkıran,
Mayasılotu, Kan otu,
Veremotu, Çayçiçeği,
Sarıçiçek, Ada çayı,
Ala çayı, Kızılçırık,
Kantaron, Mideotu,
Binbirdelikotu,
Kantaryon, Sarıcaüz,
Kantül, Kesikotu,
Kalpotu, Sarıkantaron,
Yakı kantaronu
- St. John's Wort
- boiling *Hypericum perforatum*, and
cumin / Usage: Sedative; d) Leaves,
and flowers' Inf., 1 glass a day for at
least 3 months / Usage: Sedative
- Other: a) Dry herb's Inf. / Usage:
Urinary tract infection; b) Herb
which is dry or fresh is applied on the
boil directly / Usage: Abscess dryer;
c) Some W., and oil are put in the
bottle, and the aerial parts of the herb
is put on it for a while / Usage:
Stomach diseases; d) Aerial parts
obtained from 1 kg of the herb are
boiled with 5 L W. until 2 L remain.
The liquid is drunk (Sweetener can
be used while drinking) / Usage:
Stomach diseases, and healing
wounds; e) Dry aerial parts' powder
is sprinkled onto burns / Usage:
Burns; f) Inf. of 1% is used Int.,
flowers are waited in olive oil to
make tincture. The tincture is applied
to wounds / Usage: Inf.:
Antispasmodic, anthelmintic, and
constipation; Tincture: Wound, and
abscess, Ext.; g) Flowers' Dec. /
Usage: Colitis, tuberculosis, cold,
internal diseases, rheumatism, and
hemorrhoids, anthelmintic; h)
Flowers are waited in olive oil and
applied onto the skin. The liquid
obtained from the filtration of the
flowers is used Int., leaves are
steeped for 2 minutes in W. / Usage:
The liquid prepared with olive oil,
and flowers is used Ext. for its anti-
inflammatory activity, and used for
healing the wounds. The liquid
obtained from the filtration of the
flowers is used in the treatment of
gastritis, and ulcers. Tea prepared
with leaves is used for liver, kidney,
and bile diseases; i) It is steeped as
tea, and used after mixed with
vinegar / Usage: Antipyretic; j) Fixed
oil is applied to burns / Usage: Fixed
oil speeds healing up, and is used for
its analgesic activity, prevents skin
cracking, and bandage adhesion to
the skin; k) Tea / Usage:
Antibacterial, and local anesthetics;
l) Aerial parts are soaked olive oil,
waited for 10 days at the sun, and
used Ext. / Usage: Wound healer; m)
Aerial parts are crashed in olive oil,
the skin part is closed with a cloth
after the application / Usage:
Rheumatic pains; n) Aerial parts' Inf.,
Int. / Usage: Healer; o) It is drunk
-

after boiling / Usage: Diuretic, expectorant, appetizer, overusing could be lead poison effect

12.2.1. Documented Use in Literature of *H. perforatum*

12.2.1.1. Stress-related: a) Hypericin (**32**): The main cause of antidepressant activity, clinically, hyperforin (**33**) has antidepressant activity, as well [269], b) Flavonoids in E.: Synergistic effect in antidepressant effect [269], c) E.: Non-selective serotonin (5-hydroxytryptamine, 5-HT), dopamine, noradrenaline at synapses (norepinephrine) and GABA (Gamma-aminobutyric acid) release inhibitor, beneficial to depression symptoms like sadness, helplessness, hopelessness, also good for anxiety, headache and fatigue, and premenstrual syndrome [269, 270], antidepressant through sodium channel mediated monoamine conduction modulation and inhibition of glutamate release, anxiolytic effects and used for bipolar disorder [221], beneficial to dementia through MAO-A and MAO-B (Monoaminooxidase), inhibitory activity [271], mild depression, for a high quality of sleeping [272]

12.2.1.2. Other: a) Aq. E., hyperforin (**33**), and hypericin (**32**): Significant antiepileptic, and proepileptic activities (*in vivo*) [61], b) MeOH E.: Neuroprotective in Parkinson's disease mice (Tyrosinase enzyme inhibition) [273, 274], and effective against Alzheimer's (due to inhibition of cholinesterase enzymes) [274], c) Flavonoid-rich E.: Lower the serum triglycerides, total cholesterol, and lipoprotein cholesterol as well as slow lipid peroxidation, and enhance antioxidant enzyme activity [275, 276], d) Aq. E. (*in vivo*): Reducer of the level of cholesterol, and also decrease oxidative stress, and lipid peroxidation in the blood of rats [277], e) Hypericin (**32**): Cytotoxic, and apoptogenic against MCF-7 human breast cancer cell line [278], f) 0.10–0.30 % total hypericin (**32**), 6.0 % flavonoids, and 6.0 % hyperforin (**33**) E.: Protective on spinal cord injury-induced oxidative stress, apoptosis, and Ca²⁺ entry in dorsal roots ganglion neurons of rats [279], g) EO. (leaves), germacrene D, α -humulene, β -caryophyllene: Immunomodulator through human neutrophil function (*in vitro*) [280], 70% hydroethanolic E.: Beneficial for Alzheimer's disease by AChE (45.84%) and BChE (67.40) inhibitory activity, as well as *Pseudomonas aeruginosa* through inhibition of swarming motilities with 43.58% [281]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
12.3. <i>Hypericum scabrum</i> L.	<ul style="list-style-type: none"> Kantaron, Kılıç Otu NA 	<ul style="list-style-type: none"> Using part: Flowers, leaves, & aerial parts Stress-related: a) Flowers are boiled, Int. / Usage: Antidepressant; b) Inf. (should be used without waiting. Otherwise, its taste can get a bitter taste) / Usage: Enuresis nocturna; c) Tea, a teaspoon of the plant is put into a tea glass of hot W., then steamed for 10 minutes (Should be used for 1 month, and given 1-month break) / Usage: Insomnia, and stress reducer; d) Inf. of aerial parts, which is gathered when the flowering season of the herb, then it is boiled quickly for 1-2 minutes / Usage: Relaxant against stress, and gynecological diseases Other: a) Flowers' boiling W., the liquid is used, Int., for diabetes disease, and breath shortness / Usage: Diabetes mellitus, and respiratory disorders; b) The liquid is applied / Usage: Onto wounds, and acnes, Ext.; c) Ext. use in the dressing / Usage: Stomach diseases, and antiseptic; d) Branches with flowers' Inf. (%1), Int. / Usage: Hemorrhoid, and constipation; e) Herb's Dec. is used Int. / Usage: Hemorrhoid; f) Herb with flowers are waited in olive oil for 1 month, filtered from cloth, and used every morning before eating 	[40, 45, 48, 49, 51]

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/ Usage: Ulcer; g) Inf. prepared with dried Fruits, Int., and Ext. / Usage: Int., ulcer, and Ext. for eczema treatment; h) Dried flowers are put into olive oil, made ointment / Usage: Burns; i) Flowers' Inf. / Usage: Ulcer; j) Tea / Usage: Antibiotic

12.3.1. Documented Use in Literature of *H. sabrum*

12.3.1.1. Stress-related: a) 70% EtOH E.: Anti-anxiety through antioxidant activity in anxious mice with high-fat diet [282]

12.3.1.2. Other: a) EO. (aerial parts), α -pinene (**10**): Antibacterial against *Bacillus cereus*, *Listeria monocytogenes*, *Proteus vulgaris* and *Salmonella typhimurium*, and antioxidant through DPPH assay [283], b) α -Pinene (**10**) (74%), β -pinene (4.8%), and myrcene (**14**) (3.4%): Antimalarial, and antimicrobial [284], c) Phenolic compounds, quercetin quercetin-3-*O*- β -D-glucopyranoside, quercetin-3-*O*- β -D-galactopyranoside: Antioxidant [285], d) 3-8''-Bisapigenin, quercetin, quercetin-3-*O*- α -L-arabinofuranoside, quercetin-3-*O*- α -L-rhamnoside, quercetin-3-*O*- β -D-glucopyranoside, quercetin-3-*O*- β -D-galactopyranoside, (-)-epicatechin, e) (+)-Catechin: Antimicrobial [285], f) EO.: Modulating effect on hepatic metabolizing enzymes [286], g) Fraction of DCM. E. and PE.: Cytotoxic against HT-29 and HepG-2 with apoptosis induction pathway, but MeOH E. is no cytotoxic on the same cell lines [287]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
13. Juglandaceae			
13.1. <i>Juglans regia</i> L.	<ul style="list-style-type: none"> Ceviz Circassian walnut, English walnut, Persian walnut, Walnut 	<ul style="list-style-type: none"> Using part: Fruits Stress-related: a) Tea / Usage: Good for nerves, and consciousness-expanding Other: a) Fruits are eaten when hungry / Usage: Cholesterol reducer; b) Immature fruits' Inf. (40 fruits for 1 L W.) is drunk 1 teaspoon every morning before breakfast / Usage: Goiter; c) Liquid obtained by crashing immature fruits are used Ext. / Usage: Eczema; d) Immature fruits with honey is eaten in the morning, and evening, 1 tablespoon / Usage: Hemorrhoid; e) Fruits are eaten / Usage: Appetizer, and strengthening the body; f) Leaves' Dec., Ext. / Usage: Gynecological diseases 	[30, 37]
13.1.1. Documented Use in Literature of <i>J. regia</i>			
13.1.1.1. Stress-related: a) 80 mg fruits, and W. as suspension, fixed oil (Omega 3 fatty acids), and powder residue of the Fruits: 5-Hydroxy tryptamine (5HT) metabolism increaser in rats by elevated plus maze and radial arm maze assays [288], b) Fixed oil bearing serotonin and melatonin: effective on mood, appetite, health improvement, antioxidant, sleep-wake cycle regulator, effective in sleep disorders [289], c) Protein hydrolysates: Memory improver in sleepless rats by Morris water maze assay, neuroprotective on glutamate-induced apoptosis in PC12 cells [290], neuroprotective, and memory enhancer in mice by caspases 3/7 and 8 inhibition, effective on the mRNA expression level of Bax, reduce significantly the time of the escape latency, prolong the target, and crossing times Morris water maze assay [291]			
13.1.1.2. Other: a) Walnut pepsin hydrolysates: Angiotensin-I-converting enzyme (ACE) inhibitory peptides isolation [292], b) MeOH E, acetone, and Aq. E.: Antioxidant (Acetone E., highest), concentration dependent growth inhibition activity by DPPH assay, and cytotoxic against Colo205 cell lines (Aq. E.) [293], c) 95% MeOH E. (bark): Antimicrobial, synergistic activity with oxacillin against MRSA by agar dilution and microbroth dilution tests (<i>in vitro</i>) [294], d) Dec., and MeOH E., (Procyanidins and taxifolin derivatives, and tocopherols) (leaves): Antitumor on hepatocellular carcinoma (HeLa cell lines), nontoxic on liver normal cells, antioxidant on DPPH, β -carotenbleaching inhibition, reducing power, and thiobarbituric acid reactive substances tests [295], e) 100 mg leave E. (Capsule), two times a day for three months: Effective on HbA1c, cholesterol, triglyceride levels, and cardioprotective [296], f) 80% EtOH, quercetin: Protective against UV solar rays, antiaging [297], g) EtOH E.: Hypoglycemic, blood sugar level reducer, and hypolipidemic, triglyceride reducer in diabetic rats [298], h) Bio-			

guided separation of the walnut leaf Dec., major antidiabetic molecules.: (3*S*,5*R*,6*R*,7*E*,9*S*)-3,5,6,9-tetrahydroxymegastigman-7-ene, and 3,6,9-trihydroxymegastigman-7-ene: Responsible of the antihyperglycaemic activity of E. [299], i) W. E.: Hydroethanolic Leaf E.: Anti-diarrheal, and anti-nociceptive in rats (*in vivo*) [300]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
14. Lamiaceae			
14.1. <i>Calamintha nepeta</i> L. Savi	<ul style="list-style-type: none"> Narpuz Lesser calamint 	<ul style="list-style-type: none"> <u>Using part:</u> Flowers, & leaves <u>Stress-related:</u> a) Leaves, and flowers are dried, and then used as tea / Usage: Relaxing, and delighting <u>Other:</u> NA 	[36]
14.1.1. Documented Use in Literature of <i>C. nepeta</i>			
14.1.1.1. <u>Stress-related:</u> NA			
14.1.1.2. <u>Other:</u> a) Hydroalcoholic E.: Antioxidant, anti-inflammatory, cytoprotective, inhibit COX-2 synthesis [301], b) EO.: Antimicrobial, insecticidal, antigenotoxic, W. E. (aerial parts): Hypoglycemic (<i>in vivo</i>), pulegone: Antimicrobial, antihistaminic, antipyretic, hepatotoxic, hypercholesterolemic, also inhibits cytochrome P-450, and lysosomal enzyme activities, an inhibitor of contractile activity of the isolated intestine, and myometrium, potent abortifacient, anti-feeding, pesticidal, and insect repellent, and also phytotoxic [302]			
14.2. <i>Lavandula angustifolia</i> Miller	<ul style="list-style-type: none"> Lavanta Lavender, English lavender, True lavender 	<ul style="list-style-type: none"> <u>Using part:</u> Branches, leaves, & flowers <u>Stress-related:</u> a) Liquid obtained by boiling with W. / Usage: Sedative <u>Other:</u> NA 	[31]
14.2.1. Documented Use in Literature of <i>L. angustifolia</i>			
14.2.1.1. <u>Stress-related:</u> a) Tincture: Double blind clinical trial, more effective against depression than imipramine [303], b) EO. (Inhalation): Restlessness and insomnia, strong CNS depressing [151, 270], c) Linalool (3) (EO.): Sedative, anticonvulsive [151, 304], mild anxiolytic [151, 270], motor inhibitor and spasmolytic, beneficial to hyperactivity in mice [151], d) EO., linalyl acetate (4): Sedative [305], e) EO.: Anesthetic, and sedative in blue dolphin cichlid (<i>Cyrtocara moorii</i>) fish (<i>in vivo</i>) [306], sedative through reducing anxiety in Wistar rats (inhalation) with the examination of electroencephalography during sleeping [307]			
14.2.1.2. <u>Other:</u> a) Aq. E., major compounds, caffeic acid, and luteolin-7-glycoside: Learning and memory improvement through Aβ plaque occurrence inhibitor, and antioxidant activity on thioflavin T measurement, AChE inhibitor, and DPPH assays [308], b) EO.: Fatty acids and phenolic compounds: Analgesic [270, 304], relaxant, spasmolytic, and local anesthetic [270], protector of spermatogenesis, decreased the MDA level, and increased total antioxidant, LH, and testosterone levels [309], spasmolytic [151], polyphenolic compounds: Analgesic activity, local anaesthetic, spasmolytic [270, 304], carminative, antioxidant, antiviral, antibacterial, and effective in gastrointestinal nervous, and rheumatic disorders [304]			
14.3. <i>Lavandula</i> sp. L. (<i>Lavandula stoechas</i>) = <i>Lavandula stoechas</i> L. subsp. <i>stoechas</i>	<ul style="list-style-type: none"> Karabaş, Karabaş Otu, Mavi Çay, Karahan, Oğulotu, Nuzla Lavender, French Lavender 	<ul style="list-style-type: none"> <u>Using part:</u> Leaves, aerial parts, & flowers <u>Stress-related:</u> a) Inf. / Usage: Brain disease, and mental fatigue; b) Liquid obtained by boiling with W. / Usage: Sedative; b) Aerial parts' Inf., and 2-3 number of aerial parts, boiled with 2 glasses of water for 2-3 minutes / Usage: Somniferous <u>Other:</u> a) Liquid obtained by boiling with W. / Usage: Headache; b) Tea, Inf. / Usage: Mental fatigue, shrink cancer cells, for gynecological diseases, urinary tract infections, for flu, and heart diseases; c) Oil, Ext. use with massage, and Inf. / Usage: Analgesic; d) Flowers' Inf. is used Int. / Usage: Cardiovascular diseases; e) Aerial parts' Dec. / Usage: Stomachache; f) Aerial parts' Inf. is used Int. / Usage: Prostate, diabetes, 	[14, 22, 23, 28, 31, 32, 48, 49]

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cholesterol, cold, bronchitis, and asthma diseases, knees, and neck pains, throat ache, and menstrual pain; g) Aromatic W., Int. / Usage: Expectorant, gynecological, cholesterol, blood pressure diseases; h) EO., Ext. / Usage: Analgesic; i) Tea / Usage: Quit smoking; j) 2-3 number of aerial parts, boiled with 2 glasses of water for 2-3 minutes / Usage: Cold, sniffles, foot ache, foot scar, and headache

14.3.1. Documented Use in Literature of *L. stoechas* = *L. stoechas* subsp. *stoechas*

14.3.1.1. Stress-related: a) EO. (inhalation): GABA modulator, anxiolytic, antidepressant, anticonvulsive, sedative / hypnotic, beneficial in epilepsy, calcium channel blocker, not a direct antiepileptic, but acts in this direction through its effect as a calcium channel blocker, and analgesic for colic pain [221, 310], b) EO., camphor: Stimulant effect on the sympathetic nerve system, clinical trial through measurement of salivary amylase, aromachology effects, autonomic nerves activities, evaluation of mood states [305]

14.3.1.2. Other: a) EO.: Analgesic for labor pain through clinical trials [311], b) 7-Methoxy coumarin: Smooth muscle relaxant, spasmolytic, reduce blood sugar levels, beneficial effects in cancer care [310], c) Hydroalcoholic E.: Blood sugar reducer in diabetic mice [312], d) EtOH fraction of MeOH E., major compounds, lupeol, phytol, α -cadinol, lup-20(29)-en-3-one, hydrocoumarin: Cytotoxic against HepG2 cell lines [313], e) 1,8-Cineole, EO.: Anti-inflammatory (topically) in carrageenan-induced paw, and acute ear edema, cytotoxic against human gastric adenocarcinoma (AGS), Melanoma MV3, and breast carcinoma MDA-MB-231 cell lines [314], f) Inf., EO. (leaves): Spasmolytic, antidiabetic, analgesic for menstrual pain, kidney stones, otitis, fistula, hypertension [315], g) EO. (aerial parts): Effective on sinusitis with moderate antibacterial activity against *Streptococcus pneumoniae*, *Streptococcus pyogenes*, *S. aureus*, *Haemophilus influenzae*, *Moraxella catarrhalis*, and *P. aeruginosa* by agar diffusion, microdilution, and vapor diffusion assays (*in vitro*) [316], α -tocopherol and phenethylamine: Memory enhancer through decrease of oxidative stress and increase acetylcholine in brain of mice [317]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
14.4. <i>Melissa officinalis</i> L.= <i>Melissa officinalis</i> L. subsp. <i>altissima</i> (Sm.) <i>Arcangeli</i> = <i>Melissa officinalis</i> L. subsp. <i>officinalis</i>	<ul style="list-style-type: none"> Oğlan out, Oğulotu, Melisa, İliman, Kekik, Limon otu, Limon çiçeği, Kokarot, Kovanotu, Muzçiçeği, Arıotu, Limon nanesi, Matochina, Limonche, Kolonyaotu Lemon balm, balm 	<ul style="list-style-type: none"> Using part: Leaves, flowers, & branches, shoots, young branches, & whole plant without roots Stress-related: a) Various parts of herb's Dec., and Inf. / Usage: Neural disease, and disorders, stress, and depression, sedative, neural sleep disorders, neural gastric disorders, hysteria, and melancholia, neural heartthrob (palpitation), migraine, and neural deficiency; b) Shoots' Inf. / Usage: Sleeping problems; c) Dried aerial parts' Inf., 1 tea glass a day / Usage: Sedative, and embolism; d) Whole plant's Inf. / Usage: Nervous system diseases, and shortness of breath Other: a) 2-5% of the leaf Inf., Int. / Usage: Gastric, carminative, sudorific, and antiseptic; b) Various parts of herb's Dec., and Inf. / Usage: Stomach diseases, asthma, and acnes, antispasmodic and vasodilator; c) Every morning, with an empty stomach, a liquid obtained from flowers, and leaves with boiling procedure, Int. / Usage: Cholesterol 	[8, 9, 11, 12, 33, 39, 40, 48]

reducer, and blood pressure regulator; d) Tea / Usage: Palpitation, stomach disorders, gastrointestinal system, and abdominal disorders, flatulence, chronic bronchial inflammation, vomiting, headache, hypertension, menstrual irregularity as a homeopathic remedy, and hemostatic; e) Inf. from aerial parts / Usage: Gastritis, ulcer, cancer, asthma, cough, amnesia, and digestive; f) Shoots' Inf. / Usage: Vascular occlusion; b) Inf. prepared from leaves, and young branches / Usage: Stomachache, and gastric bleeding; c) Flowers, and leaves are boiled with W., the liquid is used, Int., 3-4 times a day / Usage: Vessels cleaner

14.4.1. Documented Use in Literature of *M. officinalis* = *M. officinalis* subsp. *altissima* = *M. officinalis* subsp. *officinalis*

14.4.1.1. Stress-related: a) EO., monoterpenoids, citral [geranial (**5**), and neral (**6**)], flavonoids and phenolic compounds: Sedative, anxiolytic (*in vivo*), improves cognitive functions, according to the Commission E Monograph, effective in nervous insomnia, alleviate depression and insomnia in aromatherapy [270, 318], b) Hydroalcoholic (30% EtOH) E. (leaves) (aerial parts): Sedative in mice (*in vivo*), alleviative in insomnia, as well as EO. of the plant, not sedative [318], anxiolytic, and antidepressant via prevention of oxidative stress, and apoptosis in mice (aerial parts) by open field, elevated plus maze, forced swimming, tail suspension assays, and behavioural analysis, as well as, DPPH (quercetin as a standard), and apoptosis markers [319], c) MeOH E. of leaves, major compounds, rosmarinic acid, ursolic acid (**18**) and oleanolic acid (**19**) as responsible compounds of the activity: GABA transaminase (GABA-T) inhibitor in rat brain, MAO-A inhibitor and sedative, effective on acute stress (clinical trial), anxiety, and depression [221, 320], d) EtOH E.: Antidepressant in mice, imipramine as a standard [160], e) L-theanine, *Melissa officinalis* 50% EtOH leaves E. with 2% rosmarinic acid standardized form, and *Magnolia officinalis* bark 96% EtOH E. with 40% honokiol standardized E.combination with 25% TEA, 6.25%, and 2.5%, respectively: Effective on mood disorders by locomotor activity (Rotarod, Hole-Board, hot plate assays), anxiolytic-like activity (light-dark box, marbles, and novelty suppressed feeding assays), antidepressant-like activity (tail suspension test), as well as, neuroprotective effect through SH-SY5Y neuronal cell lines [321], f) EO.: Effective in insomnia at aromatherapy but there is no study whether the *in vitro*, *in vivo*, or clinical trial [322]

14.4.1.2. Other: a) Aq. E. (Le.): Low AChE inhibitory activity, alleviative in Alzheimer's disease because of antioxidant effect, (muscarinic, nicotinic receptor-dependent), strengthening of memory, effective in migraine, melancholia, neurosis, hysteria, and behavioral disorders (e.g. symptomatic relieving effects of agitation in Alzheimer's disease), neuroleptic effect by acting on the central acetylcholine system [270, 318], effective in Alzheimer's disease with calming, and cholinergic modulation [323], b) E. rich with rosmarinic acid: Clinical trial with modest dementia, Alzheimer's disease patients, evaluated by Neuropsychiatric Inventory Questionnaire alleviative in the symptoms of the disease [324], c) EO:Antiviral on *Herpes simplex* (HSV-1 and/-2) virus strains before adsorption, non-effective after penetration to cells (Topically application) [325], d) Aq. E., rosmarinic acid (**17**): Cytotoxic activity, and initiates cell death through apoptosis on rat glioblastoma C6 cells [326], antiviral against H3N2 subtype virus strains (*in vitro*) [327], e) Rosmarinic acid (**17**), and EtOH E.: Effective for pain relief, and inflammatory disorders, reduce inflammatory markers such as COX2, PGE-2, IL-1 β , MMP2, and NO in rats [328], f) hydroalcoholic E. (*in vitro*): Anti-adenovirus on Hep2 cell line ((3-[4, 5-dimethylthiazol-2-yl]-2, 5-diphenyltetrazolium bromide (MTT) test), inhibits adenovirus replication in post-adsorption stage, and antioxidant (2, 2-diphenyl-1-picrylhydrazyl (DPPH) assay) [329], g) 500 mg powder: Effective in the borderline hyperlipidemia of patients [330], protective on human keratinocytes against UVB radiation by reducing the ROS production, and DNA damage [331], h) EtOH E.: Alleviative in cardiometabolic diseases such as diabetes mellitus, high cholesterol level in blood, hypertension by clinical trials [332], i) Aerial parts' EO.: Inactive against *Candida albicans* [333], j) Triterpene compounds of DCM E. of leaves: Beneficial to psoriasis skin disease (*in vivo* studies in mice), and low antioxidant activity [334], k) MeOH E., and Dec.: Antioxidant [334], l) EO.: Antimicrobial, antiviral [rosmarinic acid (**17**)], functional gastrointestinal disorders antiviral against Herpesvirus [322], m) Polyphenolic compounds (herbal tea): Antispasmodic in nervous and digestive disorders [322], n) EO. of leaves: Antioxidant in

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linoleic acid autoxidation and its EDTA-mediated oxidation [335], o) Aq. E.: Vasorelaxant effect due to phenolic compounds [336]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
14.5. <i>Melissa officinalis</i> L. subsp. <i>inodora</i> Bornm.	<ul style="list-style-type: none"> Tar çoğlet, Oğulotu, Limon otu, Melisa, Pung, Punga tehtan, Rihıtınneebune, Ninhe NA 	<ul style="list-style-type: none"> <u>Using part:</u> Aerial parts, leaves, flowers, & stems <u>Stress-related:</u> a) Dry or fresh aerial parts are boiled in W., Int. / Usage: Sedative, internal diseases, headache wound healer; b) Freas aerial parts are boiled in hot W. for 1 minute / Usage: Bronchitis, shortness of breath, and liver cleaner c) Leaves, flowers, and stems are steeped like tea / Usage: Cold, and antitussive; d) Aerial parts are steeped like tea / Usage: Cardiac diseases <u>Other:</u> NA 	[44, 52]
14.5.1. Documented Use in Literature of <i>M. officinalis</i> subsp. <i>inodora</i>			
14.5.1.1. <u>Stress-related:</u> NA			
14.5.1.2. <u>Other:</u> a) EO. of leaves: Antioxidant in linoleic acid autoxidation and its EDTA-mediated oxidation [335]			
14.6. <i>Mentha longifolia</i> (L.) Hudson subsp. <i>typhoides</i> (Briq.) Harley var. <i>typhoides</i>	<ul style="list-style-type: none"> Yarpuz, Yarpız NA 	<ul style="list-style-type: none"> <u>Using part:</u> Aerial parts <u>Stress-related:</u> a) Aerial parts are chewed / Usage: Refresher, and sedative <u>Other:</u> NA 	[42]
14.6.1. Documented Use in Literature of <i>M. longifolia</i> subsp. <i>typhoides</i> var. <i>typhoides</i>			
14.6.1.1. <u>Stress-related:</u> NA			
14.6.1.2. <u>Other:</u> a) MeOH E. (aerial parts): Mild antioxidant activity on DPPH, and β -carotene/linoleic acid assays, and antimicrobial against <i>Acinetobacter lwoffii</i> and <i>Candida krusei</i> strains [337], b) Menthone (96% purity) from EO. (aerial parts), MeOH, W., EtOAc E.: Antioxidant by superoxide scavenging, metal chelating, and lipid peroxidation assays, as well as menthone has lipid peroxidation higher than standard, pyrocatechol [338]			
14.7. <i>Mentha x piperita</i> L.	<ul style="list-style-type: none"> Nane, Bahçe nanesi, Nana Peppermint, Brandy mint, Lamb mint 	<ul style="list-style-type: none"> <u>Using part:</u> Aerial parts, & leaves <u>Stress-related:</u> a) Wet or dried aerial parts' Inf., regularly, Int. / Usage: Anxiety disorders, neurosis, depression, and stress; b) Dried leaves' Inf., before sleeping, Int. / Usage: Sleep withdrawal <u>Other:</u> a) Roasting with first cotyledons are eaten, Int. / Usage: Stomachache, and ulcer; b) Mixed Inf. consists of dried herbs, marjora, cydonia leaves, and camomile / Usage: Cleaner of lungs, and fresh maker; c) Inf. prepared by dried herb alone or with linden aerial parts or with lemon, Int., used regularly / Usage: Cold, headache, sore throat, tonsil, and flu; d) Wet aerial parts is chewed or used as Inf., Int. / Usage: Bronchitis, and cough; e) Dried aerial parts is used as spice sprinkling to foods or used as Inf. / Usage: Constipation; f) Wet or dried aerial parts' Inf., Int. / Usage: Abdominal pain, dyspepsia, and nausea because of stomachic activity; g) A bundle of 	[21, 30, 37]

wet aerial parts with a bundle of aerial parts of sage is prepared Inf. with 2L W., Ext., like foot bath, once every 3 days / Usage: Feet odor, and sweating of the feet; h) Two times a day, dried aerial parts' Inf., 1 glass per time part, Int. / Usage: Strengthening the body against winter diseases; i) Wet aerial parts with a bundle of sage, and thyme's aerial parts is prepared Inf. with 3L W., put into the basin. Then 1 tablespoon of salt is applied to it. Apart from this, a basin of cold W. is prepared. Applied to a foot bath, respectively / Usage: Feet pain; j) It is used as salad, spice, and tea, Int., regularly / Usage: Protection from heart diseases; k) Fresh leaves are chewed, Int. / Usage: Bad breath odor

14.7.1. Documented Use in Literature of *M. piperita*

14.7.1.1. Stress-related: a) EO.: Anesthetic, and sedative in blue dolphin cichlid (*Cyrtocara moorii*) fish (*in vivo*) [306]

14.7.1.2. Other: a) -: Barium enema-related colonic spasm, dyspepsia, and irritable bowel syndrome, an inhibitor of spontaneous peristaltic activity, reduce total gastrointestinal transit or gastric emptying, decrease the basal tone in the gastrointestinal tract, reduce the slow-wave frequency in the esophagi, small intestine, which slows peristaltic movements, and inhibit potassium depolarization-induced responses in the intestine, relaxant the lower esophageal sphincter, antispasmodic agent for dyspepsia [339], b) MeOH E.: Protect against *Herpes simplex* virus, antibacterial activity against *Clostridium sporogenes*, *Enterobacter aerogenes*, *Klebsiella pneumoniae*, *Pseudomona aeruginosa*, *Salmonella pullorum*, *S. aureus*, *Streptococcus faecalis*, and *Comamon asterrigena* [165], c) EO.: Antispasmodic on tracheal smooth muscle of rats [340], d) EtOH E.: Antimicrobial against *Staphylococcus haemolyticus*, *E. coli*, *Cronobacter sakazakii*, *Aeromonas salmonicida*, and *Aeromona hydrophila* [341], e) 330 mg peppermint capsules: Analgesic for primary dysmenorrhea [342], EO., major compounds, menthol, and mentone: Nasal decongestant, antitussive, digestive, anti-emetic, antispasmodic, effective on symptoms of irritable bowel syndrome, and biliary disorders, local anaesthetic, antimicrobial, radioprotective, anti-inflammatory [343], wound healing activity in *S. aureus* and *P. aeruginosa* infected wound of mice through histological analyses [344], f) W. E.: Chemo preventive in rat liver [345], dry raw material (5mg/mL): Antioxidant [346], g) EtOAc E.: Effective on multidrug resistant *Streptococcus pyogenes*, *Enterococcus faecalis*, MRSA, methicillin-resistant *S. epidermidis*, and carbapenem-resistant *E. coli*, and *Klebsiella pneumonia* [347]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
14.8. <i>Ocimum basilicum</i> L.	<ul style="list-style-type: none"> Reyhan, Fesleğen, Feslikan, Feslen, Bosilek Basil, Sweet basil 	<ul style="list-style-type: none"> <u>Using part</u>: Branches, & leaves <u>Stress-related</u>: a) Tea is prepared with boiling of fresh branches in some W. If the herb is dry, a teaspoon of crushed leaves, and fresh branches are put into boiled W., and steeped. Tea is drunk when hot, Int. / Usage: Sedative; b) Leaves are chewed / Usage: Sedative <u>Other</u>: a) The sap obtained by crash of fresh branches, and leaves are dropped directly to ear / Usage: Earache; b) Inf. / Usage: Cold, flu, abdominal pain, galactagogue, and dyspepsia 	[26, 54]

14.8.1. Documented Use in Literature of *O. basilicum*

14.8.1.1. Stress-related: a) EtOH E.: Sedative in mice by using pentobarbitone sleeping time and open field assays, and analgesic in mice by formalin test [348], b) Hydro-alcoholic E.: Good in sleeping problems with hypnotic

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activity in mice compared with diazepam (standard) [349], c) EO., major compounds, chavicol (**7**) (42.8%), geranial (**5**) (13.0%): Sedative, and anxiolytic in mice, effective than hydroalcoholic E. with elevated plus maze and locomotor activity meter assays, diazepam as a standard [350], d) EO., major compounds, eugenol (**8**) (44.5%), and linalool (**3**) (21.2%) (inhalation): Anesthetic, and sedative in Nile tilapia juveniles (*Oreochromis niloticus*) [351], sedative through locomotor activity changing in mice (*in vivo*), the sedative activity of pure linalool (**3**) is higher than the mixture of eugenol (**8**), and linalool (**3**) [352]

14.8.1.2. Other: a) EO.: Antiepileptic [353], antioxidant, antimicrobial, EO. of Compact cultivar: High antibacterial activity against *Micrococcus flavus* through MIC assay (0.009 µg/mL), EO. of Osmin cultivar: High antifungal activity against between 0.08 µg/mL and 1.07 µg/mL [354], effective in the head, and stomachache [355], inhibitor in platelet aggregation [356], antitumor (leaves) [357], antibacterial, antifungal, antiviral, anti-giardial, antioxidant, hypolipidemic, anti-inflammatory, a bronchodilator, anticarcinogenic [358], b) Stable silver, and bimetallic nanoparticles of Aq., and MeOH E. of flowers, and leaves: Antihyperglycemic, and antimicrobial against *S. aureus*, *E. coli*, *Bacillus subtilis*, and *P. aeruginosa* [359], c) EO. complexed with β-cyclodextrin: Anti-inflammatory (acute, and chronic) in mice [360], d) Polysaccharide: Weakened tumor metastasis, and reduce tumor hypoxia by inhibiting Hypoxia-inducible factor 1 alpha (HIF-1α), suppress metastasis by reducing H3K9me2, and inhibiting epithelial-mesenchymal transition (EMT) [361], e) *n*-Hexane and EtOH E. (Fruits): Anti-inflammatory by egg albumin denaturation assay, antioxidant (DPPH), hydrogen peroxide scavenging, and total antioxidant capacity assays), and anthelmintic with earthworms (*Eudrilus eugeniae*) cell lines (*in vitro*) [362]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
14.9. <i>Origanum onites</i> L.	<ul style="list-style-type: none"> Kırkbaş kekik, Tokalı Kekik, Bilya kekik, Kara kekik, Topbaş kekik, Akbaşlı, Akbaşlı kekik, Kaya kekiği, Koca kekik, Eşek kekiği, Arı kekiği, Güve kekiği, Bilyalı kekik Oregano, Turkish oregano 	<ul style="list-style-type: none"> <u>Using part:</u> Aerial parts <u>Stress-related:</u> a) Aerial parts' Inf. (Int.) / Usage: Sedative when palpitation, and high blood pressure <u>Other:</u> a) Wet or dried aerial parts with flowers' Inf. / Usage: Body strengthening for the purpose of preventing diseases; b) Henna obtained from the aerial parts is made with walnut leaves / Usage: Hair strengthening; c) Inf. is prepared with its dried aerial parts, and sage's dried aerial parts / Usage: Severe flu; d) Aerial parts' Inf. / Usage: Stomachache, strengthening activity on the stomach; e) A few drops of oil obtained from aerial parts, Int. / Usage: Good for nausea; f) Dried aerial parts' Inf., Int., regularly / Usage: Winter diseases (Headache, abdominal pain, cold, the sniffles, flu, and bronchitis); g) Inf. prepared from its dried aerial parts with flowers, and camomile's dried aerial parts, regularly, Int. / Usage: Bronchitis; h) Wet or dried aerial parts' Inf., regularly, Int. / Usage: Weak nails strengthening; i) Aerial parts' Inf. is drunk to children, and the young ones, regularly, Int. / Usage: Muscle development; j) Inf. of aerial parts is used regularly / Usage: High blood sugar reducer, and diabetes disease easer; k) A tablespoon of salt is added to 3L of Inf. prepared with a bundle of dried aerial parts with a bundle of sage, thyme, and mint's dried aerial parts, and poured into a clean basin for a foot bath. The 	[21, 27]

process is applied once every 3 days / Usage: Foot pain reliever; 1) 2 teaspoons of dried aerial parts, a pinch of parsley, and onion are mixed in a tea glass of olive oil and boiled. Sit on steam when it is boiling for ovarian or it is put on some clean cloth and applied onto pubic. After this operation, they pray for healing / Usage: Infertility in women

14.9.1. Documented Use in Literature of *O. onites*

14.9.1.1. Stress-related: NA

14.9.1.2. Other: a) EO., major compounds, carvacrol (70%) (aerial parts): Antiangiogenic, and cytotoxic through, anti-angiogenic (tube formation test), cell migration inhibitory (migration assay) and apoptosis inhibitory (DAPI staining) activities on rat adipose tissue endothelial cell (RATECs) and 5RP7 (c-H-ras transformed rat embryonic fibroblasts) cell lines (*in vitro*) [363], colon scar preventive in rats with colitis by intra-rectal and intra-peritoneal (*in vivo*) [364], antimicrobial, antioxidant, insecticidal, larvicidal, fumigant toxicity, hepatoprotective, cytotoxic, genotoxic, antigenotoxic, antidiabetic, acaricidal, antiviral, anti-inflammatory, and analgesic [365], antiprotozoal on *Trypanosoma bruceirhodesiense* cell lines, both carvacrol, and thymol compounds show antiprotozoal activity [366], b) Thymol: Antimicrobial, antiviral (*Herpes simplex* virus type-1), antioxidant, and larvicidal [365], c) Carvacrol: Antimicrobial, antiviral, antioxidant, larvicidal, acaricidal, hepatoprotective, antimutagenic, and DNA synthesis inhibitor [365], d) Terpinen-4-ol: Antimicrobial, larvicidal, e) 1, 8- Cineole and camphor: Antimicrobial [365], f) MeOH E.: Antimicrobial, and antioxidant [365], g) EtOH, deodorized EtOH, *n*-hexane, deodorized *n*-hexane, Ch., Aq. E, carvacrol, and rosmarinic acid (17): Antioxidant by DPPH assay [365], cytotoxic against human glioblastoma (U87) and triple-negative breast cancer (MDA-MB231) by MTT assay [367], antifungal against *Saccharomyces cerevisiae* higher than nystatine [368], h) EO. and carvacrol as a pure compound: protective and apoptosis inhibitory effect on methotrexate-induced rats' liver and kidney tissues through bcl-2/bax ratio and glutathione (GSH) level alleviative activities [369], i) Acetone E.: Antimicrobial [365], j) Aq. distillate: Effective on endothelial function, effective on the cardiac, respiratory, and gastrointestinal system, and antioxidant [365], k) Hot Aq. E.: Insecticidal, and larvicidal [365] l) Hydrosol: Antimicrobial [365], m) γ -Terpinene: Antimicrobial, antiviral, and larvicidal [365], isoborneol, borneol, dihydrocarvone, α -pinene (10), β -pinene, geraniol, nerol, camphene, linalool (3), and eugenol (8): Antimicrobial, and antiviral [365]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
14.10. <i>Origanum sipyleum</i> L. (Endemic)	<ul style="list-style-type: none"> Mor mercan NA 	<p><u>Using part:</u> Flowers</p> <p><u>Stress-related, & Other:</u> a) – / Usage: Sleeping problems, and shortness of breath</p>	[41]

14.10.1. Documented Use in Literature of *O. sipyleum*

14.10.1.1. Stress-related: NA

14.10.1.2. Other: a) EO. of both natural (aerial parts (α -cadinol, major compound) and flowers (germacrene-D, major compound) and micropropagated (thymol, major compound) plants: Antimicrobial activity with less differences between them [370], b) EtOAc, MeOH, and W. E. of aerial parts: Antioxidant, antimicrobial, and antifungal against *C. albicans*, *C. tropicalis*, *S. aureus*, and *S. thyphimurium*, important for ulcerative colitis, anticholinesterase with AChE, and BChE, and cytotoxic against colon cell line (HCT116) [371], low antioxidant (DPPH, β -carotene assays), α -tocopherol, BHT (butylated hydroxytoluene), and BHA (butylated hydroxyanisole) as standards, non-AChE inhibitory active, and modest BChE activity, galantamine as a standard [372]

14.11. <i>Rosmarinus officinalis</i> L.	<ul style="list-style-type: none"> Biberiye, Biberiye otu, Kuşdili, Kuşdiliotu, Hasalban, Akpüren, Zeytin Çiçeği, Akilotu Rosemary 	<ul style="list-style-type: none"> <u>Using part:</u> Aerial parts, & leaves <u>Stress-related:</u> a) Dec. of aerial parts / Usage: Paraesthesia in brain disease; b) Tea (steeping), Int. / Usage: Sedative, and amnesia; c) Inf. of leaves / Usage: Sleep withdrawal (insomnia) <u>Other:</u> a) Fresh or dried leaves' Inf., regularly used with an empty stomach, Int. / Usage: Diabetes mellitus; b) Fresh or dried aerial parts' Inf. / Usage: High cholesterol 	[11, 14, 16, 21, 31, 33, 49]
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level reducer, strengthens the immune system; c) Dried aerial parts' Inf., regularly, Int. / Usage: Bronchitis, colds, flu, asthma, sniffles, spasmolytic, stomach reliever, biogenic, for osteoporosis (regularly using), and burns body fat to lose weight; d) Boiled with W. / Usage: Blood pressure; e) Inf. of leaves, Int., after drinking a glass of lemon juice, Int. / Usage: Heart conditions

14.11.1. Documented Use in Literature of *R. officinalis*

14.11.1.1. Stress-related: a) EO., major compound, 1,8-cineole, and α -pinene (**10**) (leaves, and stems): Psychostimulant in the central nervous system of mice by observation of stereotype movements, thiopental, and apomorphine as standards [373], anti-stress activity in mice by tail suspension assay with inhalation of EO. [374], b) W.E.: Antidepressant in mice through swimming test which is comparable with imipramine standard [375], c) Rosmanol (**20**), circsimaritin (**22**) and salvigenin (**21**) from EtOH E.: Antidepressant by tail suspension and forced swimming assays, anxiolytic by elevated plus maze and light/dark box assays, and analgesic by tail immersion and hot plate assays in mice as well as non-toxic via acute toxicity in mice [376], d) Hydro-alcoholic E. (70%) (leaves): Anxiolytic by elevated plus maze, locomotor activity, open arm, and close arm tests in mice [377], be effective in the depression of mice [378], e) 500 mg dry aerial parts capsules, orally: Clinical trial, memory enhancer, effective in sleeping problems, depression, and anxiety in university students [379], f) Ursolic acid (**18**): Effective in depression by tail suspension, and forced swimming assays [378]

14.11.1.2. Other: a) EO.: Cause a generalized tonic-clonic seizure, epileptogenic [380], low AChE inhibition, effective in oxidative stress [270], b) Hydroalcoholic E.: Cholinergic activity especially on AChE receptor in pheochromocytoma PC12 cell lines belong to rats with the mechanism of phosphorylation of ERK1/2 [381], alleviative in urinary tract infections with antibacterial against *S. aureus* (the most sensitive), *Klebsiella pneumoniae*, and *Proteus vulgaris*, antioxidant on β -carotene bleaching test and high cytotoxic by brine shrimp lethality test [382], wound healing activity in rats but not as much as madecassol [383], b) Rosemary E.: Anti-proliferative on human melanoma A375, and breast cancer cells, cytotoxic on colon (CaCo-2), DU145, and PC3 prostate, ovarian, cervical, bladder, liver, and lung cancer cell lines [384, 385], c) Carnosic acid: Cytotoxic against breast, colon, pancreatic, prostate, liver, lung, skin, kidney, brain, neural, and ovarian cancer [385], Rosmarinic acid (**17**): Anticancer against colon, breast, prostate, leukemia, ovarian, gastric, and skin cancer [385], d) 1, 8-Cineole, and carnosic acid: Antibacterial efficacy against nosocomial multidrug-resistant bacteria (MDR) [386], W. E.: Antioxidant (DPPH assay) [387], officinoflavonoid A, and rosmanol: Inhibitor on intracellular triglyceride capacity in HepG2 cells [388], e) Distilled E.: Reduce plasma glucose levels (orally) [389], f) Aq. E.: Antihyperlipidemic, effective in metabolic syndrome [389], g) MeOH E.: Suppress gluconeogenesis [389], antibacterial against *S. aureus* (the lowest sensitivity), *Bacillus cereus*, *E. coli* and *Pseudomonas aeruginosa* (the most sensitive) according to minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) calculation [390], rosmacinalis (phenylethanoid glycoside) (a), 2-phenylethyl *O*- α -L-rhamnopyranosyl-(1 \rightarrow 6 \rightarrow)-*O*- β -D-glucopyranoside (b), clinopodioidide C (c), rosmanol (d) (**20**), 7 α -methoxyrosmanol (e) 7 β -methoxyrosmanol (f) and carnosol (g) from MeOH E., EtOAc, and *n*-butanol E. of leaves: a, and b have moderate anti-inflammatory through nitric oxide production inhibitory activity on RAW 264.7 cell lines, L-NMMA as a Standard, but c-g are cytotoxic on RAW 264.7 cell lines [391], h) E. with 40% carnosic acid, and carnosic acid as a pure compound: Memory, and learning ability enhancer in rats, and mice through hippocampus dendritic and synaptic markers, and reduction of astrogliosis, changing of number of $A\beta$ plaque, and phospho-tau staining (3-month-use) [378]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
14.12. <i>Salvia adenocaulon</i> P. H. Davis (Endemic)	<ul style="list-style-type: none"> Kızlaryülmesi NA 	<ul style="list-style-type: none"> <u>Using part:</u> Aerial parts <u>Stress-related, & Other:</u> a) Tea / Usage: Anti-stress, calming nerves, sedative and fatigue, throat inflammation, cold, and blood cleaner 	[41]
14.12.1. Documented Use in Literature of <i>S. adenocaulon</i>: NA			
14.13. <i>Salvia palaestina</i> Benth	<ul style="list-style-type: none"> Adaçayı, bağladeyl 	<ul style="list-style-type: none"> <u>Using part:</u> Whole plant 	[53]

- Palestinian sage, Maryam-golifelestini
- Stress-related: a) Inf. / Usage: Sleeping problem
- Other: a) Poultice / Usage: Burns, and scars

14.13.1. Documented Use in Literature of *S. palaestina*

14.13.1.1. Stress-related: NA

14.13.1.2. Other: a) Circimaritin from leaves: Antibacterial against Gram+, and Gram – bacteria (*S. aureus*, *S. epidermidis*, *E. coli*, *K. pneumoniae*, *P. vulgaris*, *P. aeruginosa*) [392], b) EO. of aerial parts: Antioxidant on β -carotene/linoleic acid, DPPH, reducing power test systems (Major compounds: Caryophylleneoxide, and β -caryophyllene) [393], major compounds, sclareol (20.2%), β -caryophyllene (16.6%) and linalool (**3**) (8.6%): antimicrobial against *Bacillus subtilis* has the highest activity [394], *S. aureus*, *E. coli.*, and *Candida albicans* (Major compounds: 1,8-cineole (**9**), and camphor) [395], c) EtOH E., and its 3 number of HPLC fractions: Antimalarial on β -hematin formation test with 72%, and chloroquine, standard 93% [396]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
14.14. <i>Salvia sclarea</i> L.	<ul style="list-style-type: none"> • Adaçayı • Clary sage, clary 	<ul style="list-style-type: none"> • <u>Using part:</u> Fld. branches • <u>Stress-related:</u> a) Liquid obtained from flowers boiled with W. / Usage: Nervousness, tension situation, sedative • <u>Other:</u> a) Liquid obtained from flowers boiled with W. / Usage: Stomachache 	[46]

14.14.1. Documented Use in Literature of *S. sclarea*

14.14.1.1. Stress-related: a) EO.: Antidepressant-like activity in rats by inhalation, and intraperitoneally by forced swimming test, and through the mechanism of dopamine activity [397], analgesic, and stress reducer activity in periodontitis patients by inhalation [398], alleviative in stress urinary incontinence of females with systolic blood pressure decreasing effect in clinical trial by inhalation [399]

14.14.1.2. Other: a) Salvipisone, aethiopinone, 1-oxoethiopinone and ferruginol abietane diterpenoid from acetone E. of roots: Bactericidal, and bacteriostatic against *S. aureus* and *S. epidermidis* (salvipisone highest one), and salvipisone has antibiofilm activity [400], 2,3-dehydrosalvipisone, sclareol, manool, 7-oxoroyleanone, spathulenol and caryophyllene oxide of acetone E.: Antibacterial against *S. aureus*, only caryophyllene oxide has antibacterial activity against *Proteus mirabilis* and 2,3-dehydrosalvipisone and manool have antifungal activity against *C. albicans* [401, 402] b) EO., and MeOH: Moderate antioxidant (DPPH, and β -carotene/linoleic acid tests) [403, 404], ABTS, FRAP and superoxide anion scavenging activity assays [404], antimicrobial against *S. epidermidis*, *E. coli*, *Bacillus subtilis*, *Shigella dysenteriae*, *S. aureus*, *Klebsiella pneumoniae*, *Proteus vulgaris*, *Salmonella paratyphi-A serotype*, *C. albicans*, and *Aspergillus niger* by disc diffusion, and micro-well dilution method [403], c) EtOH E., major compound, rosmarinic acid (**17**): Anti-inflammatory against periodontitis in rats by measurement of proinflammatory cytokines, tumor necrosis factor- α (TNF- α) of gingival tissues and descriptive analysis of periodontium's histological sections, and strong antioxidant by DPPH, and β -carotene/linoleic acid assays [405], d) Protocatecheuic acid, (+)-catechin, *p*-hydroxybenzoic acid, caffeic acid, o-coumaric acid (2-hydroxycinnamic acid), rutin, rosmarinic acid (**17**), luteolin, and apigenin (**23**) as major compounds of MeOH, EtOAc, and W. E.: *In silico* assay against α -glucosidase (PDB: 3TOP) and tyrosinase (PDB: 2Y9X) targets. Apigenin (**23**) has good binding to α -glucosidase, as well as quercetin has good binding to tyrosinase target, WE. has the highest α -glucosidase inhibitory activity, WE. has the lowest α -amylase activity, but only WE. has tyrosinase activity, EtOAc, and MeOH has moderate activity on AChE, and BChE receptors [406], beneficial for during menopause such as hot flashes situation thanks to its estrogen stimulating activity [407]

14.15. <i>Salvia tomentosa</i> Mill.	<ul style="list-style-type: none"> • Yakiotu, Yakışablasi, Yaka çalpası, Şalpa, Şabıla, Sanciotu, Ellikotu, Kancıkşalba, Boşçapula, Adaçayı, Boşşapla, Boşçapla • NA 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts • <u>Stress-related:</u> a) Inf. of dried aerial parts / Usage: Nerves softener, relaxant, nervousness, and tension situations • <u>Other:</u> a) Dried aerial parts' Inf., Int. or hot poultice, Ext. / Usage: Gastric diseases, throat, and abdominal pain, 	[11, 21, 34, 39]
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also spasmolytic; b) Dried aerial parts' Inf. / Usage: Diarrhea; c) Dried aerial parts' Inf. or with vapor compress / Usage: Asthma bronchitis, flu, headache, and cold, also protective from these diseases; d) Inf. prepared with aerial parts gathered from high upland, and dried together with lemon peel / Usage: Protector from winter diseases; e) Plaster prepared with a clean cloth dipped into dried aerial parts' Inf. is pasted or poultice is applied, Ext. / Usage: Plaster: Analgesic, poultice: Applied to the painful part of the body to resolve rheumatic or winter diseases; f) Gargle with dried aerial parts' Inf. / Usage: Sore throat, and toothache; g) Plaster prepared with dried aerial parts (Turkish: Kara yakı) (Inf. is poured to clean cloth or cheesecloth) / Usage: Plaster is used to make a newborn baby, which is not crying, cry to liven up the baby. Suppressed to baby's back, belly, or backside; h) It is put into gloves when working in the field or put between fingers, and tools / Usage: Protecting from injuries of hands, and dressing in case of injuries; i) Poultice prepared with dried aerial parts with thyme, and garlic or the same mix's Inf., Ext. / Usage: Hair loss prevention; j) Footbath with its dried aerial parts, and mint's dried aerial parts' Inf. in field. / Usage: Bad odor, and sweating of feet, and body; k) Its Inf. is prepared with its dried aerial parts and parsley's aerial parts / Usage: Reducer of gallbladder stones; l) Inf. of aerial parts / Usage: Anti-inflammatory, shortness of breath, heart diseases, intestinal system activator, good for losing weight, and antidiabetic

14.15.1. Documented Use in Literature of *S. tomentosa***14.15.1.1. Stress-related:** NA

14.15.1.2. Other: a) *n*-Hexane, DCM E.: Antimicrobial against *S. aureus*, *Streptococcus pneumoniae*, *Moraxella catarrhalis*, *Bacillus cereus*, *Acinetobacter lwoffii*, *Clostridium perfringens*, *Mycobacterium smegmatis* and *C. albicans* [408], b) EO., major compounds, β -pinene, α -pinene (**10**), camphor, and hydroalcoholic E. (MeOH-W.): Antioxidant by DPPH, and β -carotene-linoleic acid tests (MeOH-W. > EO., BHT as a standard) [408], Modest antimycobacterial against *Mycobacterium tuberculosis* (sensitive-, resistant-standard strains and multidrug resistance clinical isolate), modest antifungal against *Microsporum gypseum*, and *Trichophyton mentagrophytes* var. *erinacei*, *C. parapsilosis*, *C. krusei*, *C. albicans* [409], c) EO., major compounds, borneol, β -pinene, camphor, α -pinene (**10**): AChE inhibitory activity, galantamine as a standard, antimicrobial against *C. albicans* and Gram+ bacteria, but not against Gram- cell lines, and high antioxidant by DPPH, ABTS, ferric reducing antioxidant power measurement, and cupric reducing antioxidant, and oxygen radical antioxidant capacity assays [410], δ -cadinene, viridiflorol, γ -muurolene and α -caryophyllene of EO.: Good affinity to α -amylase (PDB: 1B2Y), AChE (PDB:

4EY6) and BChE (PDB: 4BDS) proteins, low affinity to trypsin protein (PDB: 5I38) (*in silico*), EO. has BChE inhibitory activity (higher than AChE inhibitory activity) (*in vitro*) [411]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
14.16. <i>Salvia verticillata</i> L. subsp. <i>amasiaca</i> (Freyn&Bornm.) Bornm	<ul style="list-style-type: none"> Hart şalbası NA 	<ul style="list-style-type: none"> <u>Using part:</u> Aerial parts <u>Stress-related, & Other:</u> a) Tea / Usage: Sedative, and cold 	[41]

14.16.1. Documented Use in Literature of *S. verticillata*

14.16.1.1. Stress-related: NA

14.16.1.2. Other: a) EO., major compounds, β -pinene, and 1,8-cineole (**9**) (aerial parts): Antimycobacterial against *Mycobacterium tuberculosis* H37Ra (MIC 196 $\mu\text{g/mL}$) [412], b) EO. of aerial parts, major compound, germacrene D: Antimicrobial against Gram+ and Gram-, *C. albicans*, *C. glabrata*, and *Saccharomyces cerevisiae* strains, however not AChE, and BChE activity occurred [413], c) W. phenolic acids-rich, and MeOH E.: Antioxidant (W. > MeOH) on DPPH, ABTS, reducing power assays [414], d) Caryophyllene oxide from EO. of aerial parts: Antioxidant with DPPH test, anticholinesterase with AChE, and BChE receptors, docking procedure, and high cytotoxic activity on human glioblastoma U-87 MG and prostate PC-3 cell lines [415]

14.17. <i>Sideritis bilgerana</i> P.H. Davis (Endemic)	<ul style="list-style-type: none"> Dağçayı, Yaylaçayı, Havaotu, Altınotu NA 	<ul style="list-style-type: none"> <u>Using part:</u> Stems, & aerial parts <u>Stress-related, & Other:</u> a) Aerial parts are steeped in hot boiled W., tea when it's hot, Int. / Usage: Sedative, analgesic for abdominal pain 	[26]
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14.17.1. Documented Use in Literature of *S. bilgerana*

14.17.1.1. Stress-related: NA

14.17.1.2. Other: a) EO., major compounds, β -pinene, α -pinene (**10**), and β -phellandrene: Antifungal on *C. albicans* by microdilution broth assay [416], MeOH E.: Antifungal against clotrimazole-resistant *C. albicans* (30 mg/mL) [417]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
14.18. <i>Sideritis libanotica</i> Labill. subsp. <i>kurdica</i> (Bornm) Hub.-Mor.	<ul style="list-style-type: none"> Çayberiyeye NA 	<ul style="list-style-type: none"> <u>Using part:</u> Flowers <u>Stress-related:</u> a) Inf. with waiting in hot W. / Usage: Sedative, and relaxant <u>Other:</u> a) Inf. / Usage: Nausea; b) The herb is put into the cold W., and waited until boiling. When it is about to boil, it waits in the closed cup until steeping / Usage: Mouthwash for inside mouth scars 	[54]

14.18.1. Documented Use in Literature of *S. libanotica* subsp. *kurdica*: NA

14.19. <i>Stachys cretica</i> L. subsp. <i>anatolica</i> Rech.f. (Endemic)	<ul style="list-style-type: none"> Yağlıkara NA 	<ul style="list-style-type: none"> <u>Using part:</u> Aerial parts <u>Stress-related, & Other:</u> a) Tea / Usage: Insomnia, blood sugar, and cholesterol reducer 	[41]
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14.19.1. Documented Use in Literature of *S. cretica* subsp. *anatolica*:

14.19.1.1. Stress-related: NA

14.19.1.2. Other: a) Aq. and MeOH E.: Tyrosinase and α -amylase inhibitory activities (MeOH E. > Aq. E.), antioxidant activity through CUPRAC, FRAP, DPPH, ABTS, phosphor-molybdenum and ferrous ion chelating assays (*in vitro*) [418]

14.20. <i>Stachys thirkei</i> K. Koch	<ul style="list-style-type: none"> Minareotu, Tavşanakotu NA 	<ul style="list-style-type: none"> <u>Using part:</u> Aerial parts <u>Stress-related:</u> a) Inf. / Usage: Nervous system calmer <u>Other:</u> a) Inf. / Usage: Carminative, cold, and digestive 	[11]
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14.20.1. Documented Use in Literature of *S. thirkei*.

14.20.1.1. Stress-related: NA

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14.20.1.2. Other: a) EtOH E.: Antimutagenic activity against *Salmonella typhimurium* TA98 and TA100 strains with 44.03% [419], b) Aq. and MeOH E.: Antioxidant through CUPRAC and DPPH assays (*in vitro*), c) *n*-Hexane E.: Antifungal against *C. albicans* through MIC assay [420]

- 14.21. *Thymus leucostomus* Hausskn. et. Velen. var. *argillaceus* Jalas (Endemic)**
- Kekik, Kaya kekiği, Taşkekiği
 - NA
 - Using part: Whole plant, & aerial parts [39]
 - Stress-related: a) Inf. / Usage: Sedative
 - Other: a) Inf., 3 tea glasses a day, Int. / Usage: Mouth, and gum inflammation, kidney stones, stomach ache; b) 1 glass of Inf., in the morning with an empty stomach, Int. / Usage: Urinary infections; c) A half of tea glass of Dec., Int. / Usage: Diabetes mellitus; d) 1-2 glasses of Inf., Int. / Usage: Shortness of breath, and diuretic; e) 1 glass of Inf., in the mornings with an empty stomach, Int. / Usage: Rheumatismal diseases. It's not recommended to pregnant to use

14.21.1. Documented Use in Literature of *T. leucostomus* var. *argillaceus*: NA

- 14.22. *Thymus pseudopulegioides* Klokov et Des.-Shost.**
- Anzer çayı, kekik / Anzer tea
 - NA
 - Using part: Flowers, leaves, & aerial parts [36]
 - Stress-related: a) Tea/ Usage: Tranquilizer
 - Other: a) Tea steeped with flowers, and leaves / Usage: Intestinal parasites, and anthelmintic; b) Leaves' Inf. / Usage: Cleaner in the treatment of the mouth, and tooth diseases; c) Dec. of aerial parts / Usage: Gastric disorder

14.22.1. Documented Use in Literature of *T. pseudopulegioides*

14.22.1.1. Stress-related: NA

14.22.1.2. Other: a) Antimicrobial, against pathogenic microorganisms [421], b) Methyl rosmarinate: Carbonic anhydrase II inhibitor both *in vitro* and *in silico* with molecular docking [422]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
14.23. <i>Vitex agnus-castus</i> L.	<ul style="list-style-type: none"> • Hayıt ağacı, Hayıt, Kürf, Acıhayıt • Chaste tree berry 	<ul style="list-style-type: none"> • <u>Using part:</u> Seeds • <u>Stress-related, & Other:</u> a) Crushed seeds are steeped like tea / Usage: Stress, and boredom, to improve ovarian development, and regulation of the menstrual cycle 	[51]

14.23.1. Documented Use in Literature of *V. agnus-castus*

14.23.1.1. Stress-related: a) Ch., and EtOAc E.: Opioidergic activity not κ -, but μ - and δ -subtypes of the receptor [423]

14.23.1.2. Other: a) EtOAc E. of leaves: Antibacterial against MRSA (streptomycin as a standard) [424], EtOAc E. subfractions: Anti-inflammatory and antitumor activities through COX2 inhibitory activity with a selectively manner [425], b) Apigenin (23), vitexin, and penduletin: Phytoestrogens that are effective on estrogen receptor β selectively, especially apigenin (23) [426], EtOH-W. (50:50) E. of fruits, and dopaminergic compounds, diterpenes: Premenstrual mastodynia serum prolactin levels reducer bound to recombinant DNA receptors [427], c) EO. (Major components of the oil were 1,8-cineole, sabinene, as major compounds), and W. E. of fruits: Antioxidant on DPPH, β -carotene/linoleic acid and reducing power tests [428], d) EO. of roots: Cytotoxic activity against breast cancer cell line through the caspase-3 receptor (MCF7), apoptosis inducer on MCF7, and A569 cell (lung) lines [429], e) EO. of leaves: Analgesic, hydroalcoholic E. (purchased): Antiepileptic in male rats, intraperitoneally with kindling parameters observation [430], f) Sabinene, 1,8-cineole (9), and linalool (3): Antibacterial activity in molecular docking program with PDB: 2VXY protein [431]

15. Lythraceae

15.1. <i>Punica granatum</i> L.	<ul style="list-style-type: none"> • Nar • Pomegranate, Gulnarfarsi 	<ul style="list-style-type: none"> • <u>Using part:</u> Fruits [31] • <u>Stress-related:</u> a) Liquid obtained by boiling the fruits coat / Usage: Sleeplessness disease (insomnia) • <u>Other:</u> a) Fruits' juice / Usage: Defibrillator; b) Pomegranate syrup / Usage: Diabetes diseases, and bloodshot (Drop)
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15.1.1. Documented Use in Literature of *P. granatum*

15.1.1.1. Stress-related: a) EtOH E. (seeds): Antidepressant-like activity by tail suspension test, imipramine as a standard, alleviate sleeping problems with evaluation of sleeping time, anxiolytic by elevated plus maze, analgesic through the hot plate, and tail-flick assays (morphine as a standard) in mice, also it is tested for psychomotor, muscle relaxant activity evaluation [432], the same E. shows modest sedative activity through GABA_A and 5-HT_{2C} receptor in mice, alleviate sleeping moderately in the other research [433], the same E. has found significantly anxiolytic in rats through mirror chamber, and elevated plus maze assays [434], b) Mixture of 0.4 mL/kg *Citrus limon*, and 5 mL/kg *Punica granatum* juice of fruits: Anxiolytic and antidepressant effects by forced swimming and open field tests and elevated plus-maze assays in rats [435]

15.1.1.2. Other: a) 50% EtOH E. of flowers: Effective in diabetes mellitus in rats (400 mg/kg) by evaluating of blood glucose levels of rats, also effective on conjunctivitis, antibacterial, antifungal, antifertility, and anthelmintic [436], b) EtOH E. of leaves: AChE and BuChE inhibitory activity, and anti-inflammatory by 5-lipoxygenase inhibitor activities [437], also anticonvulsant with decreasing of seizures of mice in 100 and 200 mg/kg dosages [434], c) EtOH E. of seeds: Good anticonvulsant by decreasing of seizures in mice with 300, and 600 mg/kg, and no toxicity [438], d) 50% EtOH E. of dried peel: Healer for colitis by reducing intestinal bacteria [439], e) 50% EtOH of ripe peel of fruits: Cytotoxic activity against HTB140, HTB177, MCF7, HCT116 cancer cell lines (MCF7 the highest), and MRC-5 normal fibroblast through MTT, cell cycle, migration and clonogenic assay [440], f) MeOH E. (leaves): Anti-inflammatory, antioxidant by DPPH, ABTS assays, and cytotoxic against MCF-7 breast cancer cell lines [437], also the same E. has antiepileptic activity through enhancing of GABA receptors level in brain of albino mice by 6-Hz seizure assay in 400 mg/kg orally [441], g) Tannin riched fraction of MeOH E.: Inhibitor activity against CQ-sensitive (D10) and the CQ-resistant (W2) strains of *Plasmodium falciparum* (*in vitro*), and antiplasmodial effect on *Plasmodium berghei* CQ sensitive microorganisms by observation of eggs growing of it. It has also found antimicrobial against *S. aureus* and *E. coli*, immunomodulator, antimalarial, astringent, homeostatic, antidiabetic (only flowers part), antidiareic, anthelmintic especially tape worms, thus effective on dysentery, diarrhea and ulcers etc. [442], h) Hydroalcoholic fruits E.: Analgesic by tail immersion, hot plate, and writhing tests in mice (*in vivo*) [443], i) 70% MeOH E. (fruits): Modest antioxidant by DPPH, ABTS, and FRAP assays [444], j) MeOH E. (peel): Anthelmintic through egg hatching inhibition assay with *Haemonchus contortus* worms [445], k) Pomegranate juice: At dosage of 8 mL/kg has anti-inflammatory effect by myeloperoxidase, biochemical, glutathione, alkaline phosphatase assays, as well as, histopathological, and macroscopic observation [446], l) Pomegranate juice with atorvastatin: Adjuvant effect for atorvastatin against cholesterol levels [447], moreover, protective against brain damage in cerebellar purkinje and granular cells of mother rats throughout their pregnancy and breast feeding period because of high cholesterol diet, 0.4 mL of 20% diluted juice with W., daily application orally, and 10 mg/kg atorvastatin [448], m) Total oligomer flavonoids riched E. (leaves): Antibacterial against *S. aureus*, and *E. coli* resistant strains by disc diffusion method and microdilution assays [449], n) Mixture of punicalagin and zinc (II): Wound healing in oral scars through decreasing of fibroblast viability, proliferation, and migration by MTT assay [450]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
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16. Malvaceae

16.1. <i>Tilia argentea</i> Desf.	<ul style="list-style-type: none"> • Ihlamur • Silver linden, linden, lime 	<ul style="list-style-type: none"> • <u>Using part:</u> Inflorescence, roots, cortex, & leaves [15] • <u>Stress-related:</u> a) Flowers' Dec. is added to babies' bath / Usage: Sleep helping • <u>Other:</u> a) Flowers' Inf., Int. / Usage: Expectorant; b) Flowers' Inf., Int. by adding lemon / Usage: Flu c) Flowers' Inf., Int. / Usage: Cold; d) Root and bark's Inf., Int. / Usage: Cold; e) Flowers, and leaves' Inf., Int.
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/ Usage: Cold; f) Heated leaves are put onto the joints / Usage: Rheumatic pains

16.1.1. Documented Use in Literature of *T. argentea*

16.1.1.1. Stress-related: a) Inf. of flowers: Antistress, adaptogenic activity in mice by swimming forced test [451]

16.1.1.2. Other: a) WE.: High antioxidant by reducing power assay but not any antimicrobial activity (disc diffusion method) [452], b) MeOH E. of flowers, and tiliroside: Hepatoprotective in mice through production of tumor necrosis factor- α (TNF- α) inhibition by evaluation of serum GPT, and GOT parameters [453], c) 80% EtOH E. of leaves, flavonoid 1, and 2: Anti-inflammatory by paw edema test, and analgesic by abdominal constriction (writhing) assay in mice (50 mg/kg) without acute toxicity and gastric ulcer [454], d) 70% Acetone E. (leaves): High antioxidant by ABTS, and radical cation assays [455], e) 70% EtOH E. of bracts, and flowers: Antioxidant by DPPH, Fe (II), and Fe (III) power activity tests [456]

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| 16.2. <i>Tilia rubra</i> DC. | • Ihlamur | • <u>Using part:</u> Inflorescence [39] |
| subsp. <i>caucasica</i> | • NA | • <u>Stress-related:</u> a) Inf. / Usage: Sedative |
| (Rupr.) V. Engler | | • <u>Other:</u> a) Inf. / Usage: Expectorant, cough, Int., and throat inflammatory, 2 glasses a day, flu, and abdominal pain. It's not recommended for pregnant women. |

16.2.1. Documented Use in Literature of *T. rubra* subsp. *caucasica*: NA**17. Myrtaceae**

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| 17.1. <i>Myrtus communis</i> | • Mersin | • <u>Using part:</u> Leaves [23] |
| L. | • Myrtle | • <u>Stress-related:</u> a) Dec. prepared with leaves, and thyme is used for bath / Usage: Relaxant |
| | | • <u>Other:</u> a) Dec. is drunk 1-2 glasses along the illness / Usage: Cholesterol, abdominal pain, odor of sweat, cancer, and sore throat; b) Dec., Int., 1-2 glasses along the illness. Leaves are infused in some raki, an alcoholic drink, for 15 days. Liquid, Int., a half tea glass, every morning before eating / Usage: Asthma, and bronchitis; c) Dec., Int., 1-2 glass along with the illness. Dec. of the leaves, seeds, and every morning before eating, per day for 1 glass for 5-6 months / Usage: Diabetes diseases; d) Leaves are boiled with lemon and W., Int. usage along with the illness / Usage: Tonsils; e) At the same portion olives, myrtle, and walnut's leaves are boiled, Dec., Int. usage along with the illness, one glass per day / Usage: Blood pressure diseases; f) Dalan, mersin, and olives' leaves are boiled for Dec. is drunk 1-2 glasses every day along with the illness / Usage: Cardiovascular diseases |

17.1.1. Documented Use in Literature of *M. communis*

17.1.1.1. Stress-related: a) EO., major compounds, myrtenol (**11**), myrtenyl acetate (**12**): Alleviative in sleeping disorders with hypnotic activity in mice by pentobarbital-induced sleeping time, chimney, and traction assays [457], b) Hydro-alcoholic E. (80% EtOH): Hypnotic, anxiolytic, muscle relaxant, non-anticonvulsant in male mice by performing open field, righting reflex, grip strength and pentylenetetrazole-induced seizure assays, and $\alpha 2$

GABA receptor activator, as well as rapid eye movement, and non-rapid eye movement in male Wistar rats, intraperitoneally [458]

17.1.1.2. **Other:** a) Aq., and EtOH E. of aerial parts: Analgesic by hot plate and writhing assays, and effective on both acute and chronic inflammation by xylene-induced ear edema and a cotton pellet assays [459], b) Myrtucommulone: Anti-inflammatory through selective microsomal prostaglandin E2 synthase-1 and 5-lipoxygenase inhibition, effective in rats Caco-2 model [460], c) Aq. E. of seeds: Protect against castor oil-induced acute diarrhea in rats because of its antimicrobial activity, especially against *E. coli* by disc diffusion, minimum inhibition, and bactericidal concentration assays, gentamicin as a standard, and antioxidant activity through thiol group, lipid peroxidation, superoxide dismutase, catalase, glutathione peroxidase activity, hydrogen peroxide, iron, calcium, and protein level evaluation [461], d) Polyphenol-rich, and flavonoid-rich fractions from leaves: High antioxidant by DPPH assay, good Fe²⁺ chelating, nitric oxide scavenging, and reducing power activity (polyphenol-rich is better than flavonoid-rich, ascorbic acid as a standard) [462], MeOH E.: Fe³⁺ chelating activity in thalasemic mice with iron intoxication [463], e) EO., major compounds, 1,8-cineole (**9**), myrtenyl acetate (**12**), α -pinene (**10**): Alleviative in oral, gastrointestinal, and vaginal infectious fungus through anticandidal activity against *C. albicans*, *C. parapsilosis* and *C. tropicalis* (less than the other strains) by minimum bactericidal concentration assay, as well as biofilm, and adhesion blocker ability by adhesion test, and observation of biofilm formation [464], protective against intestinal ischemia reperfusion injury due to its antioxidant, and reactive oxygen species (ROS) activities [465], moderate both bactericidal, and inhibitory activities against *S. aureus*, *Acinetobacter baumannii*, *Klebsiella pneumoniae*, *S. epidermidis*, but not *P. aeruginosa* (resistant) by agar plate diffusion, and minimum inhibitory concentration assays [466], f) EO., and pure compounds from the EO., 1,8-cineole (**9**), α -pinene (**10**), and α -terpineol: Individually 1,8-cineole (**9**), α -pinene (**10**) have good effect through TNF- α , IL-1 β , IL-6, and eNOS mRNA expression decreasing activity on HUVEC cell damage, but EO., and α -terpineol non-effective [467], g) MeOH, EtOH, ethyl-acetate, and *n*-hexane E.: Antibacterial against *Listeria monocytogenes*, *S. aureus*, *E. coli* K12, *P. aeruginosa* [468], EtOH E. of leaves: Wound healing activity in burn injury in lung, and small intestine through antioxidant activity in rats, oral application for 2 days with observation of tissue samples, as well as, glutathione, malondialdehyde, superoxide dismutase, catalase, and glutathione *S*-transferase parameters, protective in organ damages [469], antidiabetic in diabetic rats by β cell induction, and releasing of insulin hormone [470], h) Myrtacine: Adjunctive for acne vulgaris infection [471], i) Aq. E. of leaves: Modest protective in the liver of rats from monosodium glutamate and acrylamide toxicity through apoptosis, DNA fragmentation, and cell cycle arrest mechanisms with the observation of Bcl-2 and the programmed cell death protein-1 biomarkers [472], j) Aq. E. of leaves gel formulation (hydrolyzable tannins-rich): Hemostatic by topical application in rats with tail bleeding model (*in vivo*), and observation of human blood aggregation parameters (PTT, and PT) by fluorescent microscope (*in vitro*) [473], k) Myrtol: Healer for lung injury induced by irradiation [474], l) 2% cream in metronidazole base: Alleviative in bacterial vaginosis, adjuvant to metronidazole cream [475, 476], m) Phenolic compounds-rich *n*-hexane sub-extract of acetone, and W. E. of leaves: Antibacterial by Agar well diffusion method against *S. aureus*, *E. coli*, *Klebsiella pneumoniae* and *P. aeruginosa*, strong antioxidant by DPPH assay, ascorbic acid as a standard [477]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
18. Nitrariaceae			
18.1. <i>Peganum harmala</i> L.	<ul style="list-style-type: none"> • Üzerlik, Yüzerlik • Wild Rue, Syrian rue 	<ul style="list-style-type: none"> • <u>Using part:</u> Aerial parts, fruits, & seeds • <u>Stress-related:</u> a) Fruits used by making incense / Usage: It's put indoors for soothing nervous and naughty children. It's believed that herb is good for evil eye; b) Aerial parts are burnt, and benefited from smoke as incense / Usage: Epilepsy; c) Tea / Usage: Nervous system inducer for Parkinson's disease, and insomnia; d) Fruits are eaten / Usage: Good for amnesia • <u>Other:</u> a) Fruits are swallowed for 1 month per day / Usage: Hemorrhoid; b) Aerial parts is boiled and sitted to steam / Usage: Hemorrhoid; c) Tea / Usage: Stomachache, severe shoulder pain, and expectorant 	[27, 31, 38, 43, 50]

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(Could be poisonous in overusing); e)
Seeds in the fruits are swallowed /
Usage: Keeper of blood sugar at a
certain level

18.1.1. Documented Use in Literature of *P. harmala*

18.1.1.1. Stress-related: a) Alkaloids such as harmaline (**50**), harmine (**51**): Hallucinogenic-type reversible monoamine oxidase A inhibitor, and sedative. The plant material is used for alcoholism and drug addiction due to its alkaloids [270, 478]

18.1.1.2. Other: a) EO. (seeds): Antimicrobial [479], b) 50% EtOH E. of aerial parts, and alkaloid fraction of the E.: Inhibit the frequency of cough, and prolong the cough latent period in animals, antitussive and expectorant effect [480], c) Quinazoline alkaloids from 50% EtOH E.'s fraction (aerial parts), (\pm)-vasicine, deoxyvasicine, and (\pm)-vasicinone: Significant expectorant, antitussive, and bronchodilatory activities in mice and guinea pigs coughing models (*in vivo*) [481], d) Hydroalcoholic E. (seeds): antidiabetic, and hypolipidemic [482], e) Indole alkaloid, harmalacidine obtained from CH₂Cl₂/MeOH 100:1, 40:1, and 20:1 fractions: Cytotoxic against human leukemia cell lines (U-937) [483], f) Triterpenoids (pure compounds) of seeds 70% EtOH E.: Thirteen out of sixteen triterpenoids of the E. show cytotoxic activity against HeLa, HepG2, and SGC-7901 cell lines with a IC₅₀ value range between 8 and 50 μ M [484], g) EtOH E. of seeds: Antiviral (MTT tests on MDCK cell lines) against *Influenza A* through inhibition of RNA replication and viral polymerase activity [485], h) MeOH E. (seeds) and harmine: Antiviral against *Herpes simplex virus-2* (HSV-2), as well as the alkaloid of the E., harmine (**51**), has been identified as the responsible compound of the activity, and it has synergic effect with acyclovir [486]

19. Onagraceae**19.1. *Epilobium hirsutum* L.**

- Tüylüyakıotu
- Villous Willowherb, Hairy willowherb
- **Using part:** Young shoots., roots, leaves, flowers, & fruits [27, 36]
- **Stress-related:** a) Inf. of roots, and leaves / Usage: Sedative; b) Tea/ Usage: Useful for falling sickness
- **Other:** a) Poultice obtained from leaves is applied Ext. / Usage: Bruns, and rash; b) Tincture obtained from leaves is applied into body / Usage: Muscle pain; c) Tea / Usage: Whooping cough, cough, constipation; d) Plaster / Usage: Cold, and muscle spasm

19.1.1. Documented Use in Literature of *E. hirsutum*

19.1.1.1. Stress-related: NA

19.1.1.2. Other: a) EtOH E.: Cytotoxic against prostate cell lines [487], effective in diarrhea by *in vivo* studies with motility inhibition because of tannins, antibacterial against *S. epidermidis*, antimicrobial against Gram+ bacteria (*S. aureus*, *S. pyrogenes*, *Bacillus subtilis*, *Listeria monocytogenes*, and *Streptococcus sanguis*), and Gram-bacteria (*E. coli*, *Klebsiella pneumoniae* and *P. aeruginosa*) by MIC calculation method, antifungal on some of *Candida*, *Microsporum* and *Trichophyton* members, tetracycline, and miconazole as standards [487, 488], b) Aq. E.: Anti-inflammatory because of COX-1 inhibitor activity, antioxidant with scavenger activity by hydrogen peroxide (*in vitro*), and enhancer of protein level and antioxidant enzymes (NADPH quinone reductase 1, and glutathione peroxidase) (*in vivo*) (intraperitoneally) [487], because of the presence of oenothien B in Aq. E., proliferative through prostate specific antigen releasing, and arginase as receptor activation, as well as proliferative activity on LNCaP cell lines [487], c) MeOH of aerial parts: Antinociceptive in mice with writhing test (intraperitoneally), antimicrobial, antiviral with both *in vitro* on H1N1, and H3N2 viral strains, and *in vivo* in mice, antidiarrheal [487], inhibitor of prostate specific antigen (PSA), and arginase activity (benign prostatic hyperplasia) [487], d) EO. of aerial parts, pulegone (74%), methofuran (11%): Modest antibacterial against *S. aureus*, *Bacillus cereus*, *Salmonella enterica* and *E. coli* by disc diffusion method, and determination of minimum inhibitory concentration assay [489], e) E. with purified W., and different fractions ellagic acid-rich (orally): Antioxidant [490, 491], decrease the drug-metabolizing enzymes actions [492], f) Gallic acid-rich E. (Maceration with 80% ethanol, 19% W., and 1% of 0.1% trifluoroacetic acid): Effective in convulsion, and epilepsy disease through AChE, BChE, and GABA-T inhibitor activity, antioxidant by ferric-reducing power, oxygen radical absorbance capacity, DPPH, and metal chelating assays (*in vitro*), as well as, *in vivo* studies in mice for anticonvulsant, and antioxidant activities by seizure observation, open field, rota-rod assays, evaluation of antioxidant enzymes [493], g) Myricetin 3-*O*-glucuronide from the plant: *In silico*, molecular docking study with SARS-CoV-2 target proteins, effective with -11.015 docking score on 3CLpro and PLpro viral proteins [494]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
20. Papaveraceae			
20.1. <i>Glaucium corniculatum</i> (L.) Curtis	<ul style="list-style-type: none"> • Gelincik • NA 	<ul style="list-style-type: none"> • <u>Using part:</u> Flowers • <u>Stress-related:</u> a) Inf. / Usage: Sedative • <u>Other:</u> NA 	[11]
20.1.1. Documented Use in Literature of <i>G. corniculatum</i>			
<u>20.1.1.1. Stress-related:</u> NA			
<u>20.1.1.2. Other:</u> a) Ch.-MeOH E.: Moderate AChE and BChE activity in Elman method [495], b) MeOH, and W. E.: AChE, 35-90%, cellular AChE (PC12), 26- 54% inhibitory activity, and moderate cytotoxic activity against HT-29, and HeLa cell lines [496]			
20.2. <i>Glaucium leiocarpum</i> Boiss.	<ul style="list-style-type: none"> • Boynuzlu gelincik • NA 	<ul style="list-style-type: none"> • <u>Using part:</u> Branches with leaves • <u>Stress-related, & Other:</u> a) Tea / Usage: Somniferous, and antitussive 	[25]
20.2.1. Documented Use in Literature of <i>G. leiocarpum</i>			
<u>20.2.1.1. Stress-related:</u> NA			
<u>20.2.1.2. Other:</u> DCM, and EtOAc subextract of 70% EtOH E.: Antimicrobial activity against <i>Helicobacter pylori</i> not detected [497]			
20.3. <i>Papaver dubium</i> L.	<ul style="list-style-type: none"> • Gelincik • Poppy, Flos rhoeados 	<ul style="list-style-type: none"> • <u>Using part:</u> Flowers, leaves, & Whole plant • <u>Stress-related:</u> a) Tea, 2-3 glasses per day, fresh leaves are eaten / Usage: Tranquilizer, narcotic, hypnic for the children, and for sleep disorders • <u>Other:</u> a) Gargle with flowers, and leaves' tea / Usage: Sore throat, antitussive, and analgesic; b) It is boiled with milk / Usage: Expectorant 	[25, 48]
20.3.1. Documented Use in Literature of <i>P. dubium</i>: NA			
20.4. <i>Papaver libanoticum</i> (Schott & Kotschyex Boiss.) Kadereit subsp. <i>polychaetum</i> (Schott & Kotschyex Boiss.) Kadereit	<ul style="list-style-type: none"> • Gelincik • NA 	<ul style="list-style-type: none"> • <u>Using part:</u> Flowers, & leaves • <u>Stress-related, & Other:</u> a) Tea / Usage: Sedative, somniferous, analgesic, and antitussive 	[41]
20.4.1. Documented Use in Literature of <i>P. libanoticum</i> subsp. <i>polychaetum</i>: NA			
Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
20.5. <i>Papaver rhoeas</i> L.	<ul style="list-style-type: none"> • Gelincik, Gelinalı • Red Poppy, Corn poppy, Poppy 	<ul style="list-style-type: none"> • <u>Using part:</u> Flowers • <u>Stress-related:</u> a) Young shoots are eaten after roasting with onion, and oil / Usage: Tranquilizer; b) Flowers' Dec., Int., 1-2 spoon per day along with the illness / Usage: As a sleep regulator, and relaxant • <u>Other:</u> a) Dec. of young shoots, Int. / Usage: Antitussive 	[13, 23]
20.5.1. Documented Use in Literature of <i>P. rhoeas</i>			
<u>20.5.1.1. Stress-related:</u> a) EtOH and Aq. E. of flowers (Intraperitoneally): Sedative in mice through decreasing of locomotory, exploratory and postural behavior [498], b) 50% EtOH E.: Alleviate the tolerance of morphine in mice through locomotor activity method [499], and naloxone-induced jumping and diarrhea in mice [500], moreover, effective on the tolerance of analgesic activity of morphine in mice (subcutaneous) by tail-flick assay [501], c) Hydroalcoholic E: Antidepressant-like effect in mice through forced-swimming test, fluoxetine as a standard [502]			

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20.5.1.2. Other: a) 1.5–2 hours later of eating: Observation of central nervous system (CNS) symptoms such as nausea, vomiting, convulsions, pinpoint pupils, spasm of the jaw, changing of mental status, agitations, generalized tonic-clonic seizure for 5 minutes, and miotic pupils in 3 different cases (clinical trial) [503], b) Aq. E.: Antioxidant thereby increasing GSH level, maturation medium improves the sheep oocyte maturation rate [504, 505], antiulcerogenic in rats through histopathological determination [506], c) W. E.: Useful against *C. albicans*, *C. utilis*, and *Aspergillus niger* [507], d) Alkaloid E.: Antimicrobial against *C. albicans*, *S. aureus* [507], e) Berberine: Cytotoxic against human colon cancer cells (HCT116), breast cancer cells (MCF7), and human keratinocyte cell line (HaCaT) [508], f) EtOAc fraction, kaempferol-3-sophoroside, kaempferol-3-neohesperidoside, kaempferol-3-sambubioside, kaempferol-3-glucoside, quercetin-3-sophoroside, luteolin, and chelanthifoline: Neuraminidase inhibitory on H1N1, H3N2, and H5N1 virusstrains (the potent one is luteolin) [509], g) MeOH E.: Effective against *Candida albicans*, also bacteriostatic in nosocomial infections such as Gram- (*E. coli*, *Klebsiella pneumoniae*, *Salmonella* sp.), and Gram+ (*S. aureus*, *Listeria monocytogenes*, and *Enterobacter faecalis*) bacteria through disk-diffusion, and minimum inhibition assays, as well as bactericidal concentrations method, antioxidant by DPPH assay [510]

20.6. <i>Papaver somniferum</i> L. = <i>Papaver somniferum</i> L. var. <i>somniferum</i>	• Haşhaş, Haşeş, • <u>Using part:</u> Flowers, seeds, fresh [11, leaves, fresh fruits, & bark 25, 41]
	• Haşgeş, Afyon, • <u>Stress-related, & Other:</u> a) Tea / Usage: Analgesic, somniferous, analgesic and vasodilator; b) Fresh fruits scratch with a knife and latex is gathered / Usage: A small piece of the dried latex is drunk to children when they cry to make them sleep quickly; c) Dried latex powder, and olive oil mixture / Usage: Massage to children to make them sleep easily for a long time

20.6.1. Documented Use in Literature of *P. somniferum* = *P. somniferum* var. *somniferum*

20.6.1.1. Stress-related: a) Clinical uses in India: CNS stimulant, sedative, and analgesic [511], b) Morphine: Narcotic analgesic through μ - and κ -opioid receptor [478, 512], c) Codeine: Antitussive, and analgesic through μ - and κ -opioid receptor [478, 512]

20.6.1.2. Other: a) Aq., and oil E. (seeds): Useful toward heroin and in the prevention of reactions of intraoperative anaphylaxis during anesthesia, and hypersensitivity to opiate analgesics, (Clinical trial) [513], b) Papaverine: Muscle relaxant; noscapine: Antitumorogenic, sanguinarine: Antimicrobial, antibacterial, antifungal, anti-inflammatory [512], c) Phospholipase A2: Releases linoleic, and linolenic acid from membrane phospholipids [514], d) MeOH E.: Antioxidant by DPPH, ABTS, and ferric reducing antioxidant power, and cytotoxic against HeLa (human cervical cancer), Caco-2 (human colorectal adenocarcinoma), MCF-7 (human breast adenocarcinoma), CCRF-CEM (human T lymphoblastic leukemia) and CEM/ADR5000 (adriamycin resistant leukemia) by MTT assay especially on Caco-2, and CEM/ADR5000 cell lines with approximately 15 $\mu\text{g/mL}$ IC₅₀ values [515]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
20.7. <i>Roemeria hybrida</i> L. DC.	• Morçiçek, mor gelincik • NA	• <u>Using part:</u> Leaves • <u>Stress-related:</u> a) Liquid obtained from leaves / Usage: Sedative • <u>Other:</u> NA	[31]

20.7.1. Documented Use in Literature of *R. hybrida*

20.7.1.1. Stress-related: NA

20.7.1.2. Other: Roehybridine β -N-oxide: Cytotoxic against prostate cancer cell lines, PC3 (13.3 $\mu\text{g/mL}$) and DU145 (15.1 $\mu\text{g/mL}$) [516]qq

21. Plantaginaceae

21.1. <i>Plantago major</i> L. = <i>Plantago major</i> subsp. <i>major</i> L.	• Sinirotu, Sinirliot, Kirksinirotu, karakabarcık • Plantain, Che Qian Zi	• <u>Using part:</u> Aerial parts, leaves, & flowers • <u>Stress-related:</u> a) Tea / Usage: Sedative; b) Leaves' Dec., Int. / Usage: Anti-stress, for fatigue, and sedative	[15, 27, 29, 40]
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- Other: a) Inf. (5-10%) or Dec., Int. / Usage: Diarrhea, expectorant, and diuretic because it contains tannin, and mucilage; b) (Ext.) Fresh leaves are put into hot W. to soften the leaves, and wrapped around body / Usage: Healer the wounds, and boils; c) Leaves / Usage: Ext. as antipyretic for sunstroke by wrapping, or cooked as meal, its Dec. is used as tea, Int. Usage: Ext., and Int. for stomach ache, and the abscesses; d) Fresh leaves / Usage: Maturation of the abscess; e) Dried leaves / Usage: As medicine for wounds; e) Seeds' Dec., Int. / Usage: Malaria; f) Roots' tea, Int. / Usage: Menorrhagia, as bleeding regulator Dec. for hemorrhoids treatment; g) Dec. of seeds, Int. / Usage: Malaria; h) Herb, and leaves' Dec. / Usage: Crushed herb is used Ext. by wrapping warm cloth, for stomachache, Int., and Ext.; i) Dried leaves are mixed with honey Int., fresh leaves, Ext./ Usage: Dried leaves with honey, Int. for gastric ulcer, fresh leaves, Ext. for cuttings; j) leaves.' Dec. Int., and Ext. as bath. Fruits, and leaves Int. / Usage: Dec. of leaves, Int. for stomachache, and hemorrhoid, Ext. (bath), for wounds, and rash of the body. Also Ext. for erysipelas disease wounds. Fruits, and leaves, Int. for sore throat, embolism, and hemorrhoid; k) Petals' Dec., Int. / Usage: Eczema, stomachache, and cancer; l) Leaves, Ext. / Usage: Healer the wounds, and hemostatic; m) Leaves' Inf., Int. / Usage: Asthma, burns because of its gastric activity, and cardiovascular diseases; n) Heated fresh leaves, Ext. / Usage: Maturation of the boils; o) Flowers' Dec., Int. / Usage: Diarrhea
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21.1.1. Documented Use in Literature of *P. major* = *P. major* subsp. *major* L.

21.1.1.1. Stress-related: a) Dan Xie: Alleviate sleeping problems in Chinese herbal medicine [517], b) Inf. of leaves (Aq. E.): Effective on anxiety with sedative-hypnotic activity by elevated plus-maze and sodium pentobarbital-induced hypnosis assays in rats [518]

21.1.1.2. Other: a) EtOH, and other E. of leaves: Wound healing activity on porcine skin (*ex-vivo*) [519], b) Acidic fractions: High anti-complementary activity, pectic acid polysaccharide, galactoarabinan, and galactan: Alleviate

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ulcerogenic scars (1.5–3 g/day) [520], c) Plantaglucid: Reduce the ulceration stomach of in rats significantly, increase the secretion of gastric juice of stomach of dogs [520], moreover, effective in intestinal system of rabbits through spasm reliever effect, and anti-inflammatory in oedema [520], d) High-esterified pectin polysaccharide (46–48 kDa), PMII (Compound of 50°C W. E.): Effective against *Streptococcus pneumoniae* prophylaxis in mice [520], e) *n*-Hexane E., and apolar fractions of the E.: Wound healing in rabbits [520], f) Plantamajoside: Anti-inflammatory in mice through 5-lipoxygenase, 15-lipoxygenase, and cAMP phosphodiesterase, antioxidant by DPPH assay, and antibacterial [520], g) Acteoside: Aldose reductase, and 5-HETE formation inhibitor, antibacterial, immunosuppressant, analgesic, antihypertensive in rats (10 mg/kg dosage) through decreasing the systolic, diastolic, and mean arterial blood pressure [520], h) Flavonoids, baicalein, hispidulin, and plantagin: Antioxidant, through free radical scavenging, and lipid peroxidation inhibition, i) Baicalein: Cytotoxic against human hepatoma cell lines through cell growth inhibition, and hepatic stellate cells of rats [520], j) Scutallarein, and baicalein: Effective on allergic reactions, and active on HIV-reverse transcriptase receptors (*in vitro*) [520], k) Aucubin: Anti-inflammatory in mice ear, spasmolytic in rats, antidote against *Amanita muscaria* poisoning in mice through hepatoprotective activity against α -amanitin, antiviral effect against hepatitis B virus, ursolic acid (**18**), and oleanolic acid (**19**): Hepatoprotective, antitumor, and anti-hyperlipidemic [520], l) Aq., MeOH, EtOH E. (leaves): Anti-inflammatory in thirty male Sprague-Dawley rats [521], m) PE., EtOAc, and Aq. fractions (leaves): Antimicrobial against *Bacillus cereus*, and antioxidant by DPPH, and trolox equivalents antioxidant capacity tests [522, 523], n) 70% EtOH E. with vitamin E: Renoprotective in cisplatin-induced rats by evaluation of kidney function assays [524], o) MeOH E. of seeds, leaves, and petioles, ursolic acid (**18**), and oleanolic acid (**19**), and aucubin: MeOH E. of seeds has the highest cytotoxic against MCF7, MDA-MB-231, HeLaS3, A549 and KB cell lines, (ursolic acid (**18**) has the highest cytotoxic effect) as well as, MeOH E. of leaves, petioles, and leaves has anti-inflammatory through inhibition of cytokines production of TNF- α , IL-1 β , IL-6, and IFN- γ on THP-1 macrophages [525], p) W. soluble polysaccharides, low molecular weight fractions, major compound, galacturonic acid from mature leaves: Prebiotic on *Lactobacillus* sp. cell lines by evaluation of bacterial growth, metabolites, enzymatic activity [526]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
21.2. <i>Plantago lanceolata</i> L.	<ul style="list-style-type: none"> • Sinirliot, Bağcıyaprağı, Sinirotu • Ribwort plantain, Buckhorn plantain, Long-leaved plantain, Narrow-leafed plantain, Ribwort 	<ul style="list-style-type: none"> • <u>Using part:</u> Leaves, flowers, & seeds • <u>Stress-related:</u> a) Tea, Int. / Usage: Enuretic children, and elders; b) Fresh leaves, Int. / Usage: Sedative, good for stress, and fatigue • <u>Other:</u> a) Leaves' sap, as eye drop / Usage: Antibacterial activity, gargle (oral) for upper respiratory tract infections. Drop, for eye infections; b) Leaves' poultice, Inf., and Dec. (%5-10), 2-3 glasses per day. Fresh leaves are waited in hot W. to soften, then used Ext. It can be also eaten as raw material / Usage: Healer the wounds, and boils; c) Seeds, Int. / Usage: Urine enhancer, and expectorant, good for constipation; d) Dec. is used by brewing with salt or fresh herb is used. Leaves are used as Dec., directly or poultice / Usage: Uterus cancer, urethritis, running sores, stomach diseases, and bronchitis; e) Leaves' Dec., Int. / Usage: Embolism, cuttings, and burns; f) Powder of seeds, Int. / Usage: Hemorrhoid; g) Fresh leaves Ext. / Usage: Bruising, and felon; h) Dec. of leaves, and seeds, Int. / Usage: Gastritis 	[15, 25, 27, 40]

21.2.1. Documented Use in Literature of *P. lanceolata*21.2.1.1. Stress-related: NA

21.2.1.2. Other: a) EtOH spissum E. (viscous form of the extract), and pure compounds, luteolin, acteoside, plantamajoside an catalpol peracetate: Antispasmodic on ileum, and tachea of guinea-pig, however catalpol, isoacteoside, lavandulifolioside and aucubin do not show the same activity on these tissues [527], b) Aerial parts: effective on bronchial catarrh, and inflammation of mucous membran of pharynx bactericide, anti-inflammatory, interferon production enhancer [527], c) MeOH E.: Cytotoxic against HeLa, MCF7, HT-29 and MRC-5 cell lines (*in vitro*) by sulforhodamine B test, antioxidant by DPPH, nitric oxide scavenger capacity, superoxide anion, lipid peroxidation, and reducing power assays (*in vitro*), anti-inflammatory through COX-1, and 12-lipoxygenase inhibition ability (*ex-vivo*) [528], d) EtOH E: Antitussive in guineapigs as much as codeine [529], e) MeOH, Ch., and PE. E.(Le): Weak antimicrobial against Gram+, and Gram- bacteria such as multidrug resistance *S. pneumoniae*, *S. aureus*, *Klebsiella pneumoniae*, *E. coli*, by disc diffusion method, minimum inhibition, and bactericidal concentration assays, and antioxidant by DPPH, ferric reducing power, and peroxide index tests [530], f) PE., EtOAc, and Aq. fractions (leaves): Antimicrobial against *Bacillus cereus*, and antioxidant by DPPH, and trolox equivalents antioxidant capacity tests [523], g) Glycerin extract: High antioxidant by DPPH, ferric chelation assays, and UV protector because of caffeic, synaptic and salicylic acid compounds of the E., enhancer of fibroblast production (*in vitro*) [531], h) Gel form of Aq. E. of *Plantago lanceolata*, *Aesculus hippocastanum*, as well as, EO. of *Achillea millefolium*, and *Taxodium distichum*: Anti-inflammatory in oedema of rats and mice by topically application through observation of plethysmometric method, and tail-flick assay for analgesic activity, too (Comparable with diclofenac 5% gel, as a standard) [532]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
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22. Platanaceae

22.1. <i>Platanus orientalis</i> L. (Delbıyr)	<ul style="list-style-type: none"> Çınar, Çaymığ, Kavlan, Biladan NA 	<ul style="list-style-type: none"> <u>Using part:</u> Leaves <u>Stress-related:</u> a) Small pieces of mature leaves are steeped in W. / Usage: Depression <u>Other:</u> a) Mature and dried leaves are applied to the part of the body after soaking to the hot W. / Usage: Painkiller; b) Small pieces of mature leaves are steeped in W. / Usage: Rheumatoid arthritis, and calcinosis 	[44]
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22.1.1. Documented Use in Literature of *P. orientalis*: NA**23. Poaceae**

23.1. <i>Zea mays</i> L.	<ul style="list-style-type: none"> Darı, Mısır Maize, Corn, Corn silk 	<ul style="list-style-type: none"> <u>Using part:</u> Stylus maydis <u>Stress-related, & Other:</u> a) Liquid obtained by boiling of stylus maydis / Usage: Sedative, and renal diseases 	[31]
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23.1.1. Documented Use in Literature of *Z. mays*

23.1.1.1. Stress-related: EtOH E. standardized by 6-methoxybenzoxazolinone (**31**) (0.2%): Adjuvant for sleeping drugs in pentobarbital-induced mice (melatonin as standard) [533]

23.1.1.2. Other: a) Maysin, and analogs (flavonoids): Antioxidant [534], b) supercritical fluid extraction of flavonoids from stylus maydis: Nitrite-scavenging activity, antioxidant (500 µg/mL) [535], c) Ent-kaurane diterpenoids (2nd: Maize diterpene B, 6th: 4-Desoxyxynivalenol, and 18th: Icarinol compounds) from n-butanol fraction of roots' 70% EtOH E.: Antiproliferative effects on human cancer cell lines (A549, MDA-MB-231, SK-Hep-1, SNU638, HCT116) with 1.99 -15.18 µM IC50 values (etoposide as standard) [536], d) Anthocyanin rich WE. (peonidin-3-*O*-glucoside, and cyanidin-3-*O*-glucoside active compounds), and flavonoids from different genotypes of the plant: Anti-inflammatory (quercetin, luteolin, and rutin), anti-adipogenic (vanillic acid and protocatechuic acid), and anti-diabetic activities (quercetin, luteolin, and rutin) on 3T3-L1 preadipocytes and RAW 264.7 macrophages, beneficial to obesity [537]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
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24. Primulaceae

24.1. <i>Lysimachia punctata</i> L.	<ul style="list-style-type: none"> Karga otu, Sarı kantaron NA 	<ul style="list-style-type: none"> <u>Using part:</u> Flowers, & leaves <u>Stress-related, & Other:</u> a) Dried flowers, and leaves' Inf. / Usage: Somniferous, and stomachache 	[33]
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24.1.1. Documented Use in Literature of *L. punctata*24.1.1.1. Stress-related: NA24.1.1.2. Other: a) Embelin from Ch. E. of R.: Cytotoxic against B16 and XC cell lines [538]**25. Rosaceae**

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- 25.1. *Crataegus aronia*** • Sarialıç • Using part: Bark, & flowers [48]
 (L.) Bosc. ex DC. var. • Hawthorn (General • Stress-related: a) Flowers' Inf. /
aronia name) Usage: Stress, and insomnia
 • Other: a) Flowers' Inf. / Usage: Heart failure; b) Bark's Inf. / Usage: Joint pains, and rheumatic diseases

25.1.1. Documented Use in Literature of *C. aronia* var. *aronia*: NA

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- 25.2. *Crataegus azarolus*** • Guhij, İzaran, Azrulê • Using part: Fruits, flowers, leaves, & [52]
 var. *azarolus* L. • NA seeds
 • Stress-related: a) Fresh fruits are eaten / Usage: Insomnia
 • Other: a) Fresh fruits are eaten / Usage: Cardiac diseases, diabetes mellitus, embolism, cold, antitussive, vitamin shortness, menstrual pain; b) Leaves are boiled with W., Int. / Usage: Kidney, cardiac, rheumatic, and prostate diseases, kidney stones, and diuretic; c) Leaves, and flowers are boiled, and W., Int. / Usage: Cardiac arrhythmia; e) Fruits covered with olive oil are left in the sun, then eaten / Usage: Hypertension, and diabetes mellitus; f) Fresh seeds are eaten / Usage: Immune system; g) Fruits are mashed and applied to joints / Usage: Rheumatic diseases; h) Leaves are boiled with W., Int. / Usage: Typhoid

25.2.1. Documented Use in Literature of *C. azarolus* var. *azarolus*: NA

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- 25.3. *Crataegus monogyna* Jacq. subsp. *monogyna* = *Crataegus monogyna* Jacq. var. *monogyna*** • Yemişgen, Aliç, • Using part: Flowers, fruits, fld. [15, 30, 41]
 Yemişgençalısı, Arıç branches, & leaves
 • Hawthorn • Stress-related: a) Dried branches with flowers' Dec. is used Int. three times a day. / Usage: Sedative
 • Other: a) Flowers, and leaves' Inf., Int. / Usage: Heart diseases, shortness of breath, spasmolytic; b) Fruits' Dec., 3-4 glasses a day / Usage: High blood pressure; c) Vinegar of fruits / Usage: Good for heart, high blood pressure, and cholesterol reducer, asthma, intestinal system, and weight loss

25.3.1. Documented Use in Literature of *C. monogyna* subsp. *monogyna* = *C. monogyna* var. *monogyna*25.3.1.1. Stress-related: NA25.3.1.2. Other: a) Aq., MeOH E. of leaves, flowers and fruits: Aq. E. of flowers has the highest antioxidant activity by metal chelating and reducing power tests. DPPH, ABTS, superoxide scavenging, reducing power and ferrous metal chelating tests have been tested on all E. of the 3 different plant materials [539]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
25.4. <i>Rosa canina</i> L.	<ul style="list-style-type: none"> Kuşburnu, Gül (g.), Şeytan g., Köpek g., Asker g., G. buğucuğu, Kırmızı bubuçük, Gülbüzük, G. çalısı, G. tikenı, İt üzümü, Kara kuşburnu, Köpek dikenı, Köpek götü dikenı, Kuşburnı, Öküz g., Şeytan g., Yaban g., Polat, Dikenbaşı, Pisıburnu, Öküzgöbeđi, Şılanık, Gülburnu, Gül e., Çalı g., İtburnu, Gülezer, Şılan, Kara diken, Kür, Sıtma g., G. bubusu, Shipka, Yabani g., Öküzgötü, Purç, Deli g., G. püntü, Gözkıvıştıran Rose hip, Dog rose 	<ul style="list-style-type: none"> <u>Using part:</u> Fruits <u>Stress-related:</u> a) Tea of fruits / Usage: Relaxant, and sedative <u>Other:</u> a) Fruits' jam / Usage: Cancer and hemorrhoid disease 	[12, 34]

25.4.1. Documented Use in Literature of *R. canina*

25.4.1.1. Stress-related: a) W. E. (flowers) (Intraperitoneal, and intracerebroventricular): Antidepressant by forced swimming test in mice [540], b) 80 % EtOH E. (flowers): Anxiolytic-like activity by elevated plus maze assay with 450 mg/kg dosage in rats [541], c) MeOH: W. E. (50:50) of fruits: Antidepressant and memory enhancer in diabetic mice with 250, and 500 mg/kg (intraperitoneally) by forced swimming and novel object recognition [542]

25.4.1.2. Other: a) *n*-Hexane, DCM E. of rosehips: Anti-inflammatory (*in vitro*) through inhibition of 5-lipoxygenase with formation of leukotriene B₄, inhibition of COX-1, COX-2, and radical scavenger by DPPH assay, diuretic [543], b) MeOH E. (fruits, galls): Antioxidant activity is the highest in MeOH E. of galls by DPPH, reducing power, inhibition of β -carotene bleaching, and lipid peroxidation [544], c) 0% acetone:W. E. (fruits), and *trans*-tiliroside: Anti-obese in mice (orally) through observation of fat lose and blood sugar level decreasing effects [545], d) Aq., and EtOH E. (Fruits): Antidiabetic through reducing the blood glucose level by effectiveness on growth factor for pancreatic β -cell lines [546], especially EtOH E., good antinociceptive by writhing assay, and anti-inflammatory by observation of paw, and ear oedema in mice (*in vivo*), as well as, EtOAc, and *n*-butanol E. have the same activities with a moderate level in 919 mg/kg without any toxic signs [547], e) Aq. E. (fruits): Protective against genotoxicity by Somatic Mutation and Recombination assay [548], f) Hot W. E. of rosehips: Effective against prediabetes in rats with 100 mg/kg dosage through evaluation of advanced glycation end-products, blood glucose, insulin levels both in blood and pancreas, and oral glucose tolerance assay (*in vivo*) [549], g) Hydroalcoholic E. (fruits): Hepatoprotective in diabetes rats by observation of fasting blood sugar level, total antioxidant capacity, and activity of specific liver enzymes, serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) in 250, and 500 mg/kg dosages [550], h) Rosaxan, a mixture of *Rosa canina* L. juice, *Urtica dioica* L. leaf E., *Harpagophytum procumbens* DC. ex Meisn. or *Harpago phytumzeyheri* Decne. roots E., and vitamin D.: Analgesic against gonarthritıs by evaluation of Western Ontario and McMaster Universities Arthritis Index (Clinical study) [551], i) DMSO E. with 1% acetic acid of mature fruits: Cytotoxic activity on human lung (A549) and prostate (PC-3) cancer cell lines by MTT assay through inhibition of apoptosis at G1 phase of the cell cycle, and decreasing of mitochondrial membrane potential [552], j) MeOH E.: Protective on cardiomyocytes of rats through antioxidant activity and inhibition of PERK/eIF2 α /CHOP signals by Tunel assay, histopathological examination, and Western blot analysis [553], k) Oligosaccharide fraction of EtOH-W. E. of Immature fruits: Antidiabetic through reducing of glucose blood sugar level by α -glucosidase activity in diabetic rats by Oral glucose tolerance, gluconeogenesis and α -glucosidase inhibitory assays (Orally) [554], l) Mixture of the polyphenol-rich acidic fraction of rosehips and gold complex (Au(C=C-2-NC₅H₄): Cytotoxic against Caco-2 colorectal cell lines through observation of cell cycle, reactive oxygen species, lysosome alkalization, and flow cytometry mitochondrial membrane potential test [555], m) Oligosaccharide fraction of immature fruits: Effective in diabetes mellitus disease through observation of viability of Rin-5F cells of the pancreas by MTT assay and autophagy markers [556]

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Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
26. Rutaceae			
26.1. <i>Citrus aurantium</i> L.	<ul style="list-style-type: none"> • Turunç • Bitter orange, Sour orange, Seville orange 	<ul style="list-style-type: none"> • <u>Using part:</u> Fruits • <u>Stress-related, & Other:</u> a) Fruits are eaten / Usage: Soothing nerves, spasmolytic, and digestive 	[31]
26.1.1. Documented Use in Literature of <i>C. aurantium</i>			
26.1.1.1. <u>Stress-related:</u> a) EO. (Peel), and 70% EtOH E. (leaves): Effective in insomnia by sleeping time assay, anxiety by elevated plus maze test, and epilepsy through anticonvulsant activity by seizure evaluation with 500 mg/kg, 1 g/kg dosages 30 minutes before the assay (orally) [557], b) EO. (limonene (13), myrcene (14), major compounds) is also tested by light-dark box, marble-burying, and rotarod assays with the same dosages in mice (gavage) [558], in another study EO. has found anxiolytic, but not antidepressant (forced swimming assay) through 5-HT _{1A} -receptors interaction (orally) in mice by light-dark box assay (1mg/kg repeated dosages for 14 days or 5 mg/kg) [559], clinical trial studies with chronic myeloid leukemia, preoperative patients, anxiety before dental treatment have been shown anxiolytic activity EO. of flowers has anxiolytic activity, as well (inhalation, and orally) [560], it is also effective in anxiety while cocaine withdrawal by evaluation of Trait-State Anxiety Inventory, and the Analog Smoke Scale (clinical trial) [561], c) Aq. E. of flowers: Anxiolytic, and sedative in rats by elevated plus maze, and pentobarbital sodium sleeping time assays, as well as, examination of the basolateral amygdala [562], d) EO.: Alleviate insomnia in older heart failure patients with enhancing of sleep quality (Inhalation) by Hospital Sleep Questionnaire (clinical trial) [563]			
26.1.1.2. <u>Other:</u> a) 80% MeOH E. of flowers, standardized with gallic acid levels: Memory enhancer water maze, passive avoidance tests, anticonvulsant (AcHE activity test), and antioxidant (DPPH assay), and ferric reducing antioxidant power assays, and evaluation of plasma malondialdehyde levels in 300, 600 mg/kg doses in rats [564], b) Peel powder acetone E.: High antimicrobial against <i>E.coli</i> , <i>Salmonella typhi</i> , <i>Enterobacter</i> sp. and <i>Aspergillus niger</i> , as well as, EtOH E. has strong inhibitor against <i>Enterobacter</i> sp. by agar well diffusion assay [565], c) EO., aromatic W., and EtOH: Antimicrobial (EO.>EtOH E.) against amoxicillin resistant <i>Bacillus cereus</i> by minimum inhibitory concentration assay, and antioxidant (EtOH > EO., and aromatic W.) by DPPH, and hydrogen peroxide test [566], d) EO. [major compound, limonene (13): Larvicidal against <i>Anopheles stephensi</i> [567], effective in premenstrual syndrome by clinical trial with premenstrual symptoms screening tool, and general health questionnaire in two menstrual cycles (Inhalation in 0.5% concentration) (EO. of blossom) [568], e) EtOH E. of peels: Protective against hepatotoxicity through antioxidant, anti-inflammatory, antiapoptosis activities in mice by examination of serum and liver biochemistry, liver histopathology, western blood test, and quantitative real-time RT-PCR [569], f) Hesperetin from peels: Anti-inflammatory by activating the heme oxygenase (HO)-1, and nuclear factor erythroid 2-related factor 2 (Nrf2) expression, also inhibiting nuclear factor-kappa B (NF-κB) [570], g) p-Synephrine: Effective on appetite controlling, and energy enhancer through thermogenic activity without central nervous system, and cardiovascular system changing such as in diastolic blood, and arterial pressure by selective binding to lipid and carbohydrate metabolism responsible β ₃ -adrenergic receptors (Not active on α ₁ -, α ₂ -, β ₁ -, and β ₂ -adrenergic receptors), it is also responsible of glucose entering to cells, and activity of ATP level increasing in mitochondria [571]			
27. Salicaceae			
27.1. <i>Salix babylonica</i> L.	<ul style="list-style-type: none"> • Salkımsöğüt • Willow, Weeping willow 	<ul style="list-style-type: none"> • <u>Using part:</u> Roots, bark, & leaves • <u>Stress-related:</u> a) Leaves' Inf. / Usage: Sedative, and insomnia • <u>Other:</u> a) Leaves' Inf. / Usage: Antidiabetic; b) Bark is sliced into small pieces, then its Inf. is used 1 glass a day / Usage: Analgesic 	[39]
27.1.1. Documented Use in Literature of <i>S. babylonica</i>			
27.1.1.1. <u>Stress-related:</u> NA			
27.1.1.2. <u>Other:</u> a) Aq. E. of leaves: Tension reducer because of diuretic effect in rats, and heart rate enhancer, not vasodilator on bronchial smooth muscle, and jejunal smooth muscle in rabbits, but human myometrium relaxant [572], b) Aq. E. of branches, and leaves: Antimicrobial against <i>E. coli</i> and <i>S. enteric</i> , <i>C. albicans</i> strains, thiamphenicol as a standard by disk diffusion and MIC method [573], c) EtOH E.: Significant fungicidal against <i>Fusarium oxysporum</i> strains by observation of diameter differences of radial growth [574]			

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
28. Santalaceae			
28.1. <i>Viscum album</i> L. subsp. <i>album</i>	<ul style="list-style-type: none"> Ökseotu, Buruç, Ardiç burucu, Armut burucu, Kargaburun, Kuduruk, Burç, Alfaturçu, Çampurçu, Pürçek, Çiğdem, Bırç, Çeküm, Çekimçetin, Çiğirdik, Gebelek, Gelimkara, Göyce, Göbelek, Göğelek, Güveldek, Öğse, Öğselek, Purç, Purçak, Armutçeküm, Arsızot, Kuşburnu kökçesi, Gövem, Çakum, Yapışkan otu, andız, Çekim, Çöpleme, Güveltek, Hurç, Kökçe, Puruş, Yellimkara, Armutotu, Armut öveleği, Armut pürücü, Çarşı çekemi, Çeken, Fitri European mistletoe 	<ul style="list-style-type: none"> <u>Using part:</u> Whole plant <u>Stress-related:</u> a) Dried herb's Inf. / Usage: Panic attack disorder <u>Other:</u> a) Dried herb's Inf. / Usage: Arthritis, and rheumatic diseases; b) Dried leaves' Inf. / Usage: Vasodilator; c) Inf. / Usage: Diabetes mellitus 	[12]
28.1.1. Documented Use in Literature of <i>V. album</i> subsp. <i>album</i>			
28.1.1.1. <u>Stress-related:</u> a) Aq. E. of <i>Viscum album</i> : Prolong sleeping time in mice and rats, sedative through locomotor activity, Pentobarbital sleeping time assays, antiepileptic through maximum electroshock-induced seizure, isoniazid-induced convulsion, and pentylenetetrazole-induced seizure assays, as well as antipsychotic through apomorphine-induced stereotypy, haloperidol-induced catalepsy assays in mice, and rats [575]			
28.1.1.2. <u>Other:</u> a) Calopanaxin D: Relaxative, vasodilator, effective on atherosclerosis, and hypertension [576], diethyl ether, and PE. E.: Antimycobacterial against <i>Mycobacterium tuberculosis</i> H37Ra strains (<i>in vitro</i>) [577], b) Aq. E.: Antiviral against human parainfluenza virus type-2 in vero cells [578], c) EtOH, and Aq. E: Acut hypoglycemic in rats through blood sugar level decreasing [579], d) MeOH E.: Antioxidant, anticancer, antimicrobial, antiviral, apoptotic, immunomodulatory [580], e) EtOAc fraction (250 mg/kg), and its isolation compounds; 2'-hydroxy-4', 6'-dimethoxy-chalcone-4-O-β-D-glucopyranoside, and 5,7-dimethoxy-flavanone-4'-O-β-D-apiofuranosyl-(1,2)]-β-D-glucopyranoside (30 mg/kg): Significant antinociceptive, and anti-inflammatory without gastric injury (<i>in vivo</i>), cardioprotective [581]			
29. Solanaceae			
29.1. <i>Datura stramonium</i> L.	<ul style="list-style-type: none"> Datula, Yaban tatulası, Tatula, Deli patpat Jimson weed, thorn apple 	<ul style="list-style-type: none"> <u>Using part:</u> Seeds, & aerial parts <u>Stress-related:</u> a) Dried leaves are added into tobacco / Usage: Mild hypnotic; b) Aerial parts' Dec., Int. / Usage: Sedative <u>Other:</u> a) Leaves, and flowers are boiled Int. / Usage: Respiratory disorders; b) Leaves are comminuted, and smoked / Usage: Freshmaker; c) Seeds are burnt, and smoke is used / Usage: Teeth worms 	[9, 47]
29.1.1. Documented Use in Literature of <i>D. stramonium</i>			
29.1.1.1. <u>Stress-related:</u> a) Aerial parts (by smoking): Should be extremely careful during consumption, psychoactive [582], b) Leaves: Effective on hysterical, and psychological diseases, insomnia, and effective on epilepsy [583], c) Atropine, and scopolamine: Central nervous system depressants, and muscarinic cholinergic receptors antagonists, as well as, effective on pupil dilatation, thus it is used in ophthalmology, and anesthesia,			

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effective on decreasing of secretion and bradycardia, also used in toxicology science with treatment of organophosphate, and nerve gas poisoning, lastly it is used in an emergency if cardiac arrest situation occurs [270, 478, 582]

29.1.1.2. Other: a) 80% MeOH E. of roots: Antidiabetic in mice through observation of blood sugar, serum lipid, and bodyweight levels (*in vivo*), good antioxidant by DPPH assay (*in vitro*), ascorbic acid as a standard [584], b) 60% EtOH E. of leaves: Effective on reducing of blood sugar in rats (200 mg/kg) [585], c) Ch. and MeOH E. of flowers: Anticoagulant in the blood of poultry birds (*in vitro*) by observation of prothrombin time [586], d) Alkaloids, glycosides, saponins, flavonoids and tannin-rich 70% MeOH E. of seeds: Anti-inflammatory on paw edema of rats [587], e) EO. of leaves neophytadiene, and β -damascenone, major compounds: Antioxidant by DPPH, ABTS tests, anti-inflammatory through decreasing of nitric oxide level on J774A.1 cells lines, and non-toxic on the same strains, as well as, human peripheral blood mononuclear cells proliferation enhancer (Immune cells), and moderate cytotoxic on HCT116, and SW620 colon cancer cell lines [588]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
29.2. <i>Hyoscyamus reticulatus</i> L.	<ul style="list-style-type: none"> • Uyuşturan ot • Henbane 	<ul style="list-style-type: none"> • <u>Using part:</u> Seeds • <u>Stress-related:</u> a) Seeds are eaten / Usage: Stupeficient • <u>Other:</u> NA 	[38]

29.2.1. Documented Use in Literature of *H. reticulatus*

29.2.1.1. Stress-related: a) Atropin (hyoscyamine), and scopolamine (hyoscyne) from roots: Depression of the brain should be highly careful during consumption [589], b) Hyoscyamine from roots and leaves: Hallucinogenic, should be highly careful during consumption [590]

29.2.1.2. Other: a) Aq. E. of aerial parts: Moderate antioxidant by ABTS assay, and xantine oxidase inhibitor by observation of xantine oxidase enzyme levels (*in vitro*) allopurinol as a standard, as well as, decreaser of uric acid levels in mice by observation of serum urate levels (*in vivo*, orally) [591], b) EtOH, MeOH, acetone E. of aerial parts: EtOH E. has a good antioxidant activity by total antioxidant capacity, DPPH, β -carotene/linoleic acid system, ferric-reducing, and cupric-reducing power assays, BHA, and BHT as standards [592], c) MeOH E.: Analgesic in mice (*in vivo*, orally) by hot-plate and writhing tests in both acute and chronic pain [593]

29.3. <i>Mandragora officinarum</i> L.	<ul style="list-style-type: none"> • Adam otu • Devils apples, Mandrake 	<ul style="list-style-type: none"> • <u>Using part:</u> Roots • <u>Stress-related:</u> a) 1-gram powder of roots is swallowed with W. / Usage: Sedative, Parkinson's, and Alzheimer's diseases • <u>Other:</u> a) 1 gram powder of roots is swallowed with W. / Usage: Strong analgesic, skin diseases like eczema, and hormone developer in men 	[50]
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29.3.1. Documented Use in Literature of *M. officinarum*

29.3.1.1. Stress-related: a) Atropine, scopolamine: Central nervous system depressants, and muscarinic cholinergic receptors antagonists, as well as, effective on pupil dilation, thus it is used in ophthalmology, and anesthesia, effective on decreasing of secretion and bradycardia, also used in toxicology science with the treatment of organophosphate, and nerve gas poisoning, lastly it is used in an emergency if cardiac arrest situation occurs [270, 582] b) *Solanum* alkaloids: High sedative, anticholinergic (nausea, mydriasis, blurred vision, and supraventricular tachycardia) such as tricyclic antidepressants effects, should be highly careful during consumption [594, 595], c) Scopolamine: Cause delirium, suppress the central nervous system, atropine poisoning effects [594], effective on motion sickness [582]

29.3.1.2. Other: a) Atropine: Analgesic in rats and mice with hot plate, writhing, rota-rod and tail-flick assays [596], atropine (low doses): Analgesic through selective M₂ receptor inhibitory activity [597]

29.4. <i>Physalis alkekengi</i> L.	<ul style="list-style-type: none"> • Kızılyörük • Strawberry, groundcherry, Winter-cherry 	<ul style="list-style-type: none"> • <u>Using part:</u> Fruits • <u>Stress-related:</u> a) Fruits are swallowed as a whole one per day / Usage: Anxiety, and sadness • <u>Other:</u> a) Seeds are swallowed / Usage: Anti-inflammatory, and for sore throat; b) Fruits are swallowed as a whole, once per day / Usage: Skin rash 	[16]
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29.4.1. Documented Use in Literature of *P. alkekengi***29.4.1.1. Stress-related:** NA

29.4.1.2. Other: a) EtOAc fractions from EtOH E. of calyx: Effective on the diseases related to aging because of memory enhancer, fatigue, anti-aging activities through antioxidant activity in liver, spleen, and brain in mice by observation of aging biomarkers, senescence-associated β -galactosidase enzyme, as well as, forced swimming assay [598], b) Polysaccharide isolated from fruits: Hypoglycemic in mice by observation of blood sugar, and drinking water decreasing, as well as, gaining weight (*in vivo*, orally) [599], antioxidant by radical scavenger assay, and DPPH assay [600], c) Polysaccharide isolated from W. E. in alkali environment (Mature stems): Adjuvan in DNA vaccins against fungus disease related to *C. albicans* with rising of IgG, IgG1, and IgG2b antibody levels by both *in vitro* and *in vivo* analyses [601, 602], the same group currently study on RAW264.7 cell lines with the same polysaccharide, and they determine that the macro-compound induces the generation of NO, ROS and cytokines through MAPKs and NF- κ B signaling pathways with TLR2, and TLR4 mediation on RAW264.7 with pinocytosis, and phagocytic activation which is important in terms of activation of macrophages and immunity of body [603], d) EtOAc fraction of fruits with calyx: Effective on inflammation of BV2 cells through inhibition of nitric oxide, tumor necrosis factor- α , interleukin-6 and reactive oxygen species production by enzyme-linked immune sorbent, and western blot tests (*in vitro*), and analgesic on pain of mice caused by inflammation by writhing, paw edema, and licking time assays (*in vivo*, 100-200 mg/kg) [604], e) 70% EtOH: 400 mg kg⁻¹ Protective against nephrotoxicity due to their antioxidant, and anti-inflammatory activities in mice by measuring of creatinine and urea-nitrogen concentration levels [605], f) EtOAc E. from 65% EtOH of fruits and aerial parts: Antioxidant by DPPH, FRAP assays, antidiabetic in 3T3-L1 pre-adipocyte cells and HepG2-GFP-CYP2E1 (E47) cell lines (*in vitro*), α -glucosidase inhibition capacity, and alleviate the glucose transporter-4 activity, and insulin sensitivity through inhibition of cytochrome P450 -2E1 metabolism, as well as, antidiabetic in rats by evaluating of fasting blood sugar levels decreasing (*in vivo*) [606], g) Physalin D (fruits, and calyx): Effective on immune system through macrophage polarization against M2 phenotype, and osteoclast functions (*in silico* (BATMAN-TCM program), *in vitro*, and *in vivo* assays) which is good on the protection of bone loss by RANKL-induced bone cell production through calcium signaling pathway [607], h) Physalin F, B, D, hydroalcoholic (70% MeOH), and W. E.: Cytotoxic on U937, HeLA, prostate, SMMC-7721, and HL-60, as well as, effective on tumor size, antiproliferative thorough Bax/Bcl2 genes in breast cancer mice, and estrogen receptor positive breast cancer mice (*in vivo*, *in vitro*) [608, 609]

30. Urticaceae

- 30.1. *Urtica dioica* L.**
- Gicirgen, Cigirgen, Isirgan
 - Common nettle, Stinging nettle, Nettle, Great stinging nettle
 - **Using part:** Aerial parts, leaves, seeds, & roots [17, 47]
 - **Stress-related:** a) Crushed seeds, and then used by joining the soup / Usage: Antidepressant for psychological relieving; b) Seeds' Inf., Int. / Usage: Reliever in stomach diseases
 - **Other:** a) Roots' boiled liquid is filtered after cooling, 1 glass per day, before eating / Usage: Different types of cancer; b) Dried leaves' tea, Int. / Usage: Different cancer types, and cough; c) Roots' boiled liquid is filtered after cooling, and drunk 1 glass per day, before eating / Usage: Urinary infection; d) Seeds are mixed with honey, and eaten one tablespoon everyday / Usage: Respiratory, and pulmonary diseases; e) Seeds are mixed with honey, and eaten one tablespoon everyday / Usage: Intestinal cancer; f) Seeds are grinded, and used by mixing with tea / Usage: Cold; g) Aerial parts' Inf., Int. / Usage: Asthma, hemorrhoids, diabetes, and blood pressure diseases; h) Leaves' Inf., Int. / Usage: Anti-inflammatory, and laxative; i)

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Leaves / Usage: Menstrual cramps treatment; k) Aerial parts' Dec., Ext. / Usage: Glossing the hair; l) Inf. prepared in combination of *Salvia hydrangea* (flowers), *Urtica dioica* (leaves), and *Malva neglecta* (aerial parts) / Usage: Menstrual cramps; m) Inf. prepared in combination of *Anthemis cotula* or (capitulums), *Anthemis tinctoria* var. *pallida* (capitulums), *Urtica dioica* (leaves), and *Thymus praecox* subsp. *grossheimii* var. *grossheimii* (aerial parts) / Usage: Cold; n) Inf. prepared in combination of *Urtica dioica* (leaves), *Mentha longifolia* subsp. *longifolia* (leaves), and *Thymus praecox* subsp. *grossheimii* var. *grossheimii* (aerial parts), Int. / Usage: Cold

30.1.1. Documented Use in Literature of *U. dioica*

30.1.1.1. Stress-related: a) Aq. E.: 400 mg nettle tablet: Moderate activity in terms of quality of sleeping, but alleviative in duration and latency of sleeping in hemodialysis patients by Pittsburgh Sleep Quality Index (clinical trial) [610]

30.1.1.2. Other: a) 50% EtOH: Memory enhancer in mice through evaluation of AChE, malondialdehyde, thiols content and superoxide dismutase, and catalase parameters levels, as well as Morris water maze test [611], b) Aq. E.: Antiulcer, analgesic in rats, as well as antioxidant by DPPH, ABTS, and antimicrobial against Gram+ and Gram-microorganism strains [612], immunomodulatory through T lymphocyte selective activity, and chemopreventive [613], c) EtOH E.: Effective against Epstein-Barr virus, effective on the heart through +inotropic, and -chronotropic, vasoconstrictor activities, α -glucosidase, glucose absorption reducer from jejunum, antidiabetic, and gastroprotective [613], d) EtOH E. (aerial parts): Antioxidant by DPPH, ABTS, cupric reducing antioxidant capacity CUPRAC, antimicrobial against *Bacillus subtilis*, *S. aureus* and *Salmonella enteritis*, not active on *E. coli* strain by disc diffusion method [614], e) EtOH E. and Aq. E. of aerial parts: High anthelmintic activity by egg hatch assay and larval mortality assay in 25, and 50 mg/mL concentrations (*in vitro*) [615], f) Flavonoids: Immunostimulatory, anticarcinogenic, anti-inflammatory, antiallergic, expectorant, purgative, diuretic, hemostatic, against eczema, antirheumatic, worms, hyperthyroidism, and hemorrhoids [616], g) MeOH E.: Against prostate hyperplasia. Juice of aerial parts: Against cancer patients (Prostate CA). Polysaccharide from roots Aq. E.: Stimulator on T Lymphocytes [616], h) MeOH E., and sub-fraction included rutin, isoquercetin, kaempferol-3-O-rutinoside (nicotiflorin) - isorhamnetin-3-O-rutinoside mixture (narcissin), and kaempferol-3-O-glucoside (astragalín) - isorhamnetin-3-O-glucoside mixture (aerial parts): Antitumor activity on endometriosis of rats (*in vivo*) by evaluation of histopathological parameters such as tumor necrosis factor alpha (TNF- α), vascular endothelial growth factor (VEGF), interleukin-6 (IL-6) [617], i) Fresh or dried leaves: Antiallergic (Allergic rhinitis), effective on complains of benign prostat cancer patients, and arthritis, adjuvant treatment on rheumatic disease, effective on urinary system infections [618], j) Ch., and EtOAc E. of roots: Cytotoxic on acute myelogenous leukemia cell line [619], k) CH₂Cl₂ E.: Apoptotic effect on breast cancer (MDA- MB- 468), and prostate PC3 cell lines [620, 621], l) Topical gel of MeOH E. of roots, and Aq. leaf E.: Analgesic and anti-inflammatory in mice (*in vivo*) by paw edema, and writhing assays [622], m) Rosaxan, a mixture of *Rosa canina* L. juice, *Urtica dioica* L. leaf E., *Harpagophytum procumbens* DC. ex Meisn. or *Harpagophytum zeyheri* Decne. roots E., and vitamin D.: Analgesic against gonarthrosis [551], n) WE. of aerial parts: Anti-inflammatory in rats with asthma disease (1.5g/kg, orally) by evaluation of asthmatic parameters, and antioxidant by DPPH assay [623], o) 50% MeOH E.: Cytotoxic individually, and cytotoxicity activity enhancer of cisplatin while using together through endoplasmic reticulum-stress mediated apoptosis on lung cell strains which are A549, H1299, H460, H322, as well as non-toxic on Beas2B (Normal epithelial cell lines), and lung fibroblasts cell lines (Wi38) [624], p) 54% MeOH E. of leaves: Antihypertensive in rats with 10, 50, and 200 mg/kg by systolic and diastolic blood pressure reducing, losartan as a standard (*in vivo*), and antioxidant higher than butylated hydroxytoluene, but lower than vitamin C by ferric reducing antioxidant power (FRAP), Trolox equivalent antioxidant capacity, and good metal chelating ability, not radical scavenging activity [625], q) E. of seeds (purchased): Hepatoprotective and antioxidant in rats (*in vivo*) by evaluation of malondialdehyde (MDA) and reduced-glutathione (GSH) levels and superoxide dismutase (SOD), catalase (CAT), glutathione-peroxidase (GSH-Px), aspartate transaminase (AST), and alanine-aminotransferase

(ALT) levels, with 30 mL dosage [626], r) Hydroalcoholic E.: Antidiabetic activity especially on fasting blood sugar and not on insulin level (clinical trials) with 20 mg/kg [627]

Family & Taxa & Endemism	Vernacular & English Name	Using Part / Traditional Preparation / Usage	R.
30.2. <i>Urtica urens</i> L.	<ul style="list-style-type: none"> • Isırgan • Annual nettle, Dwarf nettle, Small nettle, Dog nettle, Burning nettle, Small stinging nettle, Dwarf stinging nettle 	<ul style="list-style-type: none"> • <u>Using part:</u> Stems, & leaves • <u>Stress-related:</u> a) Boiled, and filtered liquid, Int. / Usage: Relaxer, sedative, and booster • <u>Other:</u> a) Whole plant is boiled, two times a day 1 glass per part (morning, and evening), Int. / Usage: Asthma, and bronchitis; b) Boiled, and filtered liquid, Int. / Usage: Intestinal disorders; c) Dried herb is eaten with honey / Usage: Some internal diseases treatment; d) Fresh herb is applied to the problematic areas of the body, Ext. / Usage: Rheumatism, and arthritis; e) Tea prepared by boiling the leaves / Usage: Urine enhancer, anti-inflammatory, blood cleanser, and hematopoietic activities; f) Leaves are eaten as a salad or can be cooked / Usage: Cancer; g) Aerial parts' Inf., Int. two glasses a day / Usage: Analgesic; h) Aerial parts' Inf., Int. / Usage: Gastric diseases; i) Aerial parts' Inf., Int. / Usage: Immune system booster 	[37]

30.2.1. Documented Use in Literature of *U. urens*

30.2.1.1. Stress-related: a) MeOH E. of aerial parts: Anxiolytic activity with less side-effect than diazepam in mice by light/dark, hole board, and rotarod assays in mice (*in vivo*) with 100 and 400 mg/kg dosages [628]

30.2.1.2. Other: a) Patuletin: Anti-inflammatory better than diclofenac [613], antimicrobial against *C. albicans* through growing inhibition, non-active on *P. aeruginosa*, and *Klebsiella pneumoniae* [613], antidiabetic, diuretic, against arthritis pains, benign prostate CA, breast CA, stomach problems (*H. pylori*), chemoprotective, antioxidant, insecticidal [629, 630], b) EtOH E.: Antibacterial against *S. aureus*, effective in mouth scars in mice (*in vivo*) [631], c) Diethyl ether E. (aerial parts): Good antiviral against H5N1, good cytotoxic against MCF-7, HCT 116, but mild antioxidant by DPPH, and ABTS [632]

31. Verbenaceae

31.1. <i>Verbena officinalis</i> L.	<ul style="list-style-type: none"> • Mine çiçeği • Vervain 	<ul style="list-style-type: none"> • <u>Using part:</u> Flowers, & leaves • <u>Stress-related:</u> a) 300 grams of flowers is steamed in 2 L W., and drunk as tea for 2 months, before eating. / Usage: Calming nerves, insomnia, good for tension, appetizer, icterus, and cirrhosis • <u>Other:</u> NA 	[50]
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31.1.1. Documented Use in Literature of *V. officinalis*

31.1.1.1. Stress-related: a) Aq. E. of aerial parts: Good antidepressant-like activity in rats by forced swimming assay [633], elevated plus maze, light–darkbox (LDB), openfield and thiopental-induced sleeping assays in mice [634]

31.1.1.2. Other: a) Topical preparation made with MeOH E.: Anti-inflammatory, and analgesic [635], 50% MeOH E., fractions (flavonoids, and caffeoyl derivatives): Antioxidant [636], b) EO., citral (**5,6**): Apoptotic-inducing agent against chronic lymphocytic leukemia [637], c) MeOH, enriched flavonoids, supercritical CO₂ E. (*in vitro*): Gastroprotective (CO₂ E., and enriched flavonoids E.), and cicatrizing (Wound healer, CO₂ E.) [638]

ABTS: 2,2'-azino-bis(3-ethylbenzothiazoline)-6-sulfonic acid, **AChE:** Acetylcholinesterase, **Aq:** Aqueous, **BChE:** Butyrylcholinesterase, **Ch.:** Chloroform, **DCM.:** Dichloromethane, **Dec.:** Decoction, **DPPH:** 2,2-diphenyl-1-picrylhydrazyl, **E:** Extract/s, **EO.:** Essential oil/s, **EtOAc:** Ethylacetate, **EtOH:** Ethanol, **Ext.:** Externally, **GABA:**

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Gamma amino butyric acid, **Inf.:** Infusion, **Int.:** Internally, **MeOH:** Methanol, **MIC:** Minimum inhibitory concentration, **MRSA:** Methicillin-Resistant *Staphylococcus aureus*, **MTT:** 3-(4,5-dimethyl-2-thiazol)-2,5-diphenyl-2H-tetrazolium bromide, **NA:** Not available, **P.:** *Pseudomonas*, **PDB:** Protein data bank **PE.:** Petroleum ether, **R:** References of dissertations, **S.:** *Staphylococcus*, **W.:** Water

3.2. Natural compounds and their activity mechanisms with proven effects in stress-related diseases

The studies on medicinal plants show that researchers mostly focus on the activities of the plants' extracts obtained from different organic solvents. When examining the articles, it turns out that there are very few studies investigating medicinal plants against stress treatment with the active ingredient responsible for the effect. In most of these studies, it was determined that the activity tests of essential oils obtained from the medicinal plant were investigated and the main components in essential oils were held responsible for the activity. Gurağaç Dereli et al. isolated germacranolide-type sesquiterpene lactones by bioactivity-guided isolation method from methanolic extract of *Anthemis widemmania*, and found germacranolide-type sesquiterpene lactones tatrudin A (**1**) and tanachin (**2**) that were responsible for antidepressant activity of *Anthemis widemmania* [106]. According to the literature survey on these compounds, there is no other study located on their antidepressant activity; there is also no study regarding their toxicity on the healthy cell lines. But there are some studies about the cytotoxic activities of these compounds on certain cancer types (human myeloid leukemia, breast cancer) [639, 640]. It should be emphasized that these compounds may be toxic to healthy tissues, however. Thus, more studies are needed for the safety aspect of these compounds. Compound (**1**) and (**2**) are presented in Figure 4.

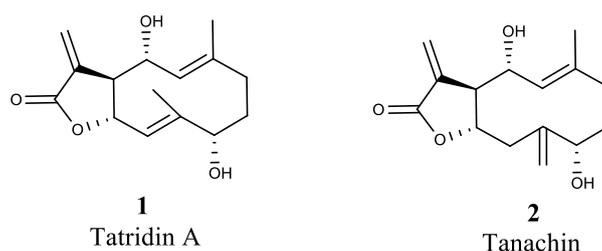


Figure 4. Chemical structure of active germacranolide-type sesquiterpene lactones

Studies with *Lavandula angustifolia* show that acyclic monoterpenoid major compounds of the essential oils, linalool (**3**) and linalyl acetate (**4**), have sedative activity. In addition, these compounds have mild anxiolytic activity on the hyperactive mice and blue dolphin cichlid (*Cyrtocara moorii*) fish [151, 270, 304, 305, 306].

Citral [isomeric mixture of geranial (**5**) and neral (**6**)], the major constituents of the *Melissa officinalis* essential oil, has sedative, anxiolytic activities proven by both clinical trials and *in vivo* studies [270, 318]. Furthermore, Commission E monograph of *M. officinalis* essential oil recommends for use for the treatment of nervous insomnia disease (Commission E, 2022). Chavicol (**7**), an aromatic monocyclic monoterpene, and geranial (**5**), an acyclic monoterpene, the major compounds of *Ocimum basilicum* essential oil, has been demonstrated as sedative and anxiolytic in mice [350].

On the other hand, Netto et al. indicate that aromatic monocyclic monoterpene eugenol (**8**) and acyclic monoterpene linalool (**3**), the other major compounds of the essential oil of *Ocimum basilicum*, show anesthetic and sedative effect on the *Oreochromis niloticus* juveniles [351]. Hirai and Ito have shown that linalool (**3**) has more sedative activity than the mixture of eugenol (**8**) and linalool (**3**) [352]. Bicyclic monoterpene 1,8-cineole (**9**) and bicyclic monoterpene α -pinene (**10**), major compounds of *Rosmarinus officinalis* essential oil, have been found to be psychostimulants in central nervous system [373], and show anti-stress activity in mice by inhalation [374]. Bicyclic monoterpenes, myrtenol (**11**) and myrtenyl acetate (**12**), the major compounds of *Myrtus communis* essential oil have been found beneficial in sleeping disorders through hypnotic activity in mice [457]. The monocyclic monoterpene limonene (**13**) and acyclic monoterpene myrcene (**14**), the major compounds of *Citrus aurantium* peels' essential oil, have shown anxiolytic activity in clinical trials (preoperative patients and cocaine

withdrawal syndrome) and on *in vivo* animal studies [558, 560, 561]. Compound (1-14) are presented in Figure 5.

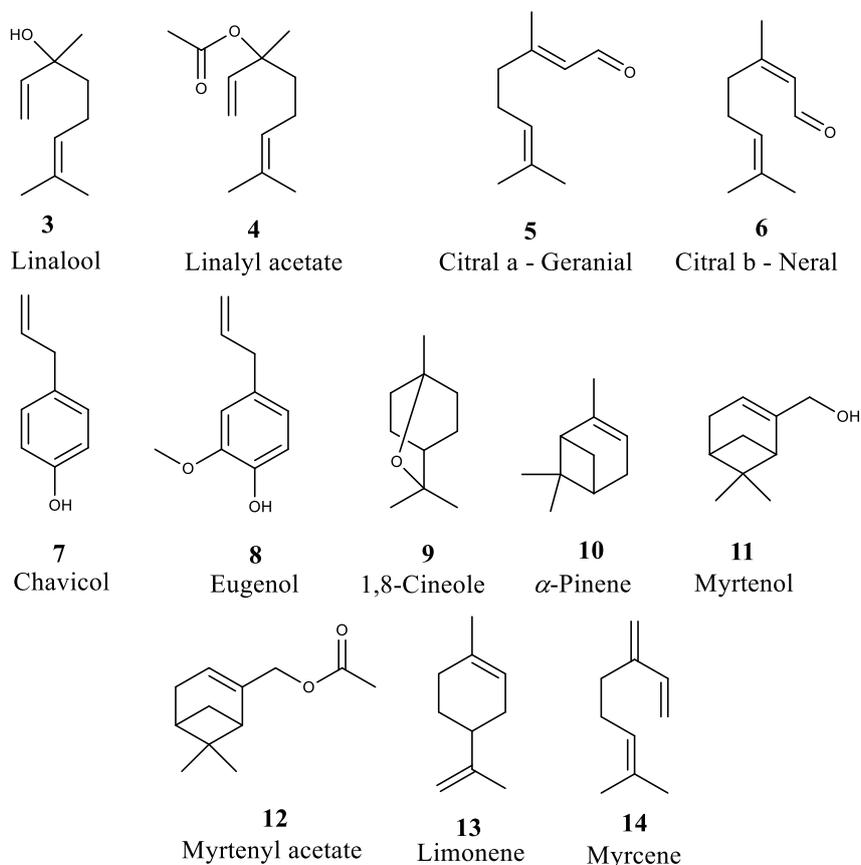


Figure 5. Chemical structure of active monoterpenoid compounds

A sesquiterpenoid volatile compound, valerenic acid (**15**) isolated from *Valeriana officinalis* and *V. dioscoridis* has been found CNS stimulant, sedative and anxiolytic through GABA_A receptor agonist, and 5-HT₅ partial agonist mechanism, as well as the compound has been determined to alleviate sleeping disorders [221]. In addition, antidepressant activities of both valerenic acid (**15**) and its acetoxy derivative, acetoxyvalerenic acid (**16**), have been proven by the evaluation of brain-derived neurotrophic factor (BDNF) in SH-SY5 cell lines [226]. Compounds (**15**) and (**16**) are presented in Figure 6.

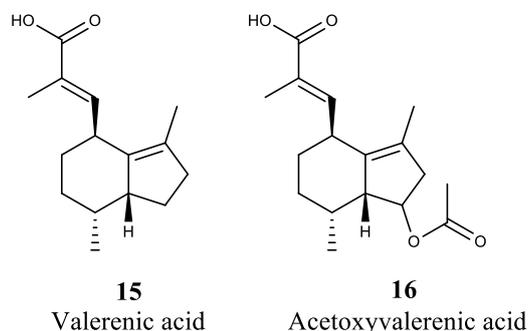


Figure 6. Chemical structure of active sesquiterpenoid compounds of *Valeriana* sp.

Rosmarinic acid (**17**), ursolic (**18**), and oleanolic acids (**19**) isolated from the MeOH E. of *Melissa officinalis* have demonstrated GABA transaminase inhibitory activity in rats. Furthermore, these compounds show MAO-A inhibitory activity, sedative effect, as well as effective on the acute stress, anxiety, and depression in clinical trials [221, 320, 378]. However, it has been shown that due to the

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synergistic effect these activities were more pronounced in combined state instead of individual compounds. Compound (17 - 19) are presented in Figure 7.

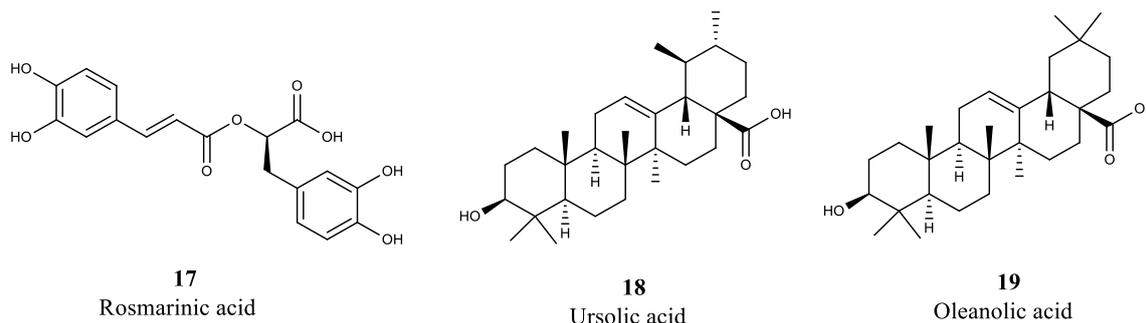


Figure 7. Chemical structure of active compounds of *Melissa officinalis*

Abdelhalim et al. investigated diterpenic compound, rosmanol (20); polymethoxylated flavonoids, salvigenin (21), and cirsimaritin (22) isolated from EtOH E. of *Rosmarinus officinalis* and found their mild anxiolytic and antidepressant activities in mice [376]. In addition, these compounds did not show high toxicity during the acute toxicity tests [376]. Compounds (20 - 22) are presented in Figure 8.

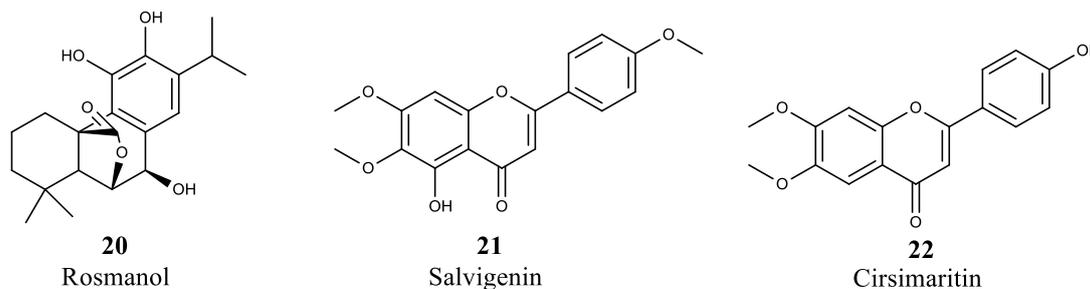


Figure 8. Chemical structure of active compounds of *Rosmarinus officinalis*

Medina et al. say apigenin (23) has sedative and anxiolytic activity via benzodiazepine receptor binding, and has no toxic or mutagenic activity [149]. Whereas, Avallone et al. investigated apigenin's activity via radioreceptor assay, and found that apigenin's sedative activity was not related to GABA_A benzodiazepine receptor, because apigenin did not block Ro 15-1788 (radioligand) [150]. Using a standardized tablet of apigenin (23) and α -bisabolol (24) mixture, it has been shown that apigenin/ α -bisabolol mixture has sedative activity and alleviates sleeping problems [151, 152]. Another standardized preparation of apigenin-7-*O*-glucoside (1.2 %) (25) and tetracumaroyl spermine (0.2-0.6 %) (26) have exhibited antidepressant activity [156, 157, 158, 159]. Compounds (23 - 26) are presented in Figure 9.

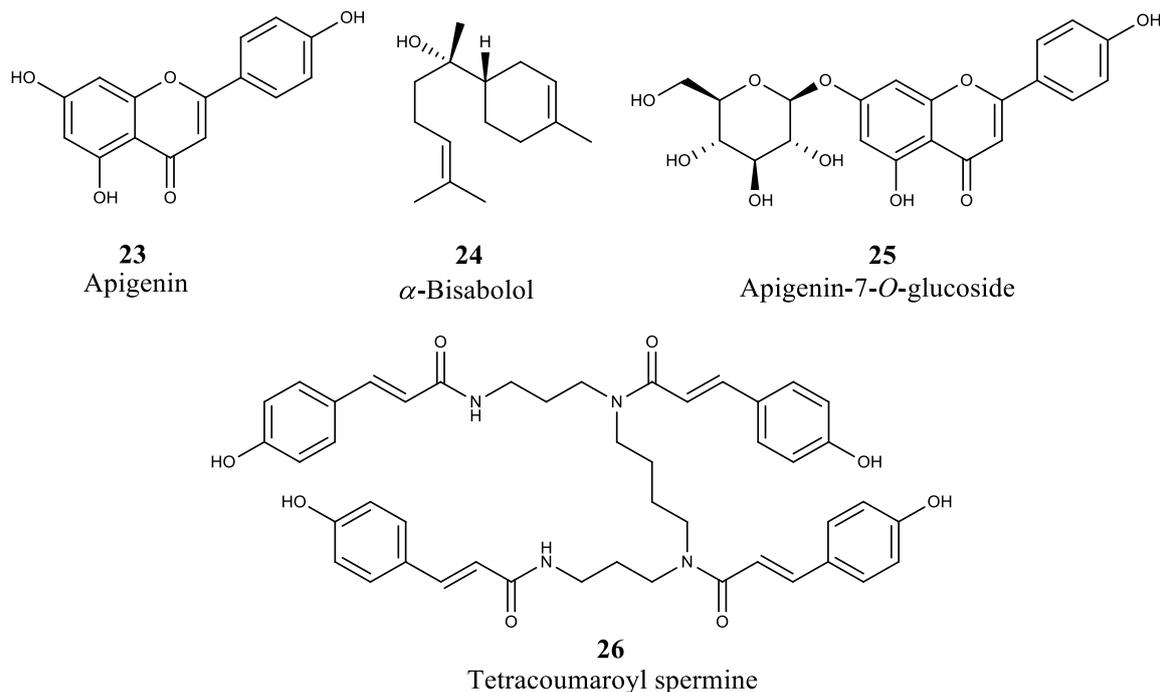


Figure 9. Chemical structure of active compounds of standardized preparations

Cannabidiol (CBD) (**27**), one of the cannabinoids of *C. sativa*, has been approved by FDA in the US, and used as anti-epileptic drug for seizures caused by Lennox-Gastaut syndrome or Dravet syndrome. The drug has been found safe over 2-year-old people. A synthetic enantiomeric form of Δ^9 -tetrahydrocannabinol (THC), dronabinol (**28**), and a synthetic derivative of cannabinoid nabilone (**29**) have been approved by FDA and used for the treatment of nausea during cancer chemotherapy [201]. Cannabidiol is also effective on sleep-wake cycle, anxiety, but does not have psychoactive effect [199]. In addition, the compound has antidepressant activity via the HT1A receptor [200]. On the other hand, THC (**28**) has psychoactive effects, and can cause intoxicating effects on human bodies. Compounds (**27 - 29**) are presented in Figure 10.

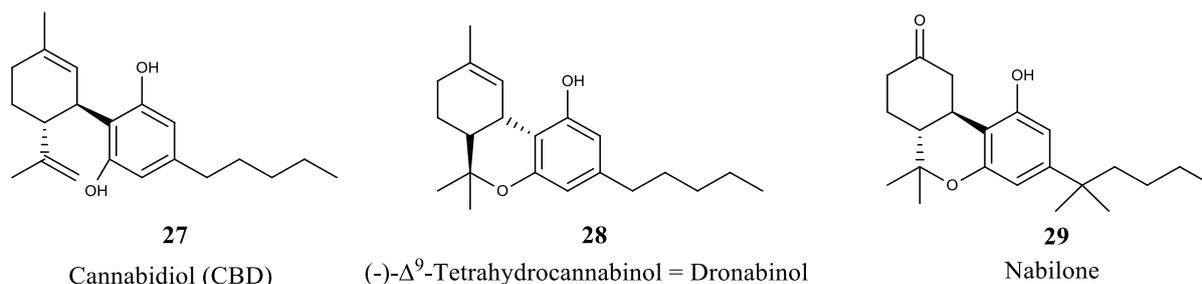
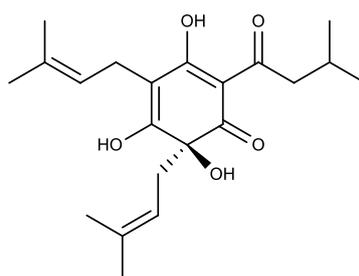


Figure 10. Chemical structure of active compounds of *Cannabis sativa* and their FDA approved synthetic forms

A bitter organic acid, humulone (**30**), has been identified as sedative which is in agreement with the traditional use of the herb, *Humulus lupulus*. In addition, the mechanism of humulone's (**30**) action has been identified through *in vivo* studies performed on mice as GABA_A receptor mediated activity [208]. Compound (**30**) is presented in Figure 11.

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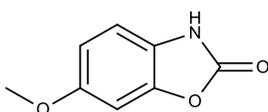


30

Humulone

Figure 11. Chemical structure of active bitter organic acid of *Humulus lupulus*

A benzoxazinoid, coixol (6-methoxybenzoxazolinone) (**31**) is a secondary metabolite of *Zea mays* have been found as sedative by induction of melatonin production in the organism [641]. A standardized preparation of coixol (0.2 %) has been investigated on mice, results of this study suggest that coixol could be used as an adjuvant to sleeping medicines instead of stand alone treatment [533]. The structure of coixol used as template to prepare synthetic 2-(Alkoxy benzothiazolinon-3yl) ethylamines with anxiolytic, antidepressant and analgesic properties and these compounds were patented [642, 643]. Compound (**31**) is presented in Figure 12.

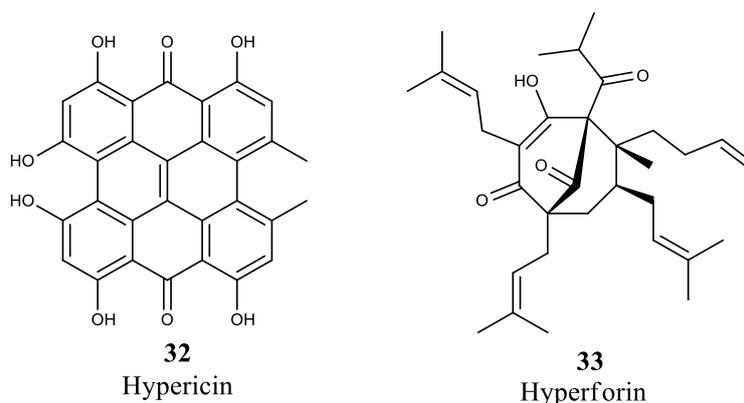


31

6-methoxybenzoxazolinone = Coixol

Figure 12. Chemical structure of active benzoxazinoid of *Zea mays*

St. John's Wort is one of the most popular herbal drugs used for their sedative effects. There are numerous studies have been performed to investigate the antidepressant effect of St. John's Wort worldwide [221, 269, 270, 271, 272]. These studies have been identified hypericin (naphthodiantrone) (**32**) and hyperforin (phloroglucinol) (**33**) as the major antidepressant compounds of *Hypericum* sp. [269]. Furthermore, flavonoids of *Hypericum* spp. have been demonstrated to have a synergistic effect on the sedative activity. Compounds (**32**) and (**33**) are presented in Figure 13.



32

Hypericin

33

Hyperforin

Figure 13. Chemical structure of active compounds of *Hypericum* spp.

Passiflora spp., plants that are not native to Turkey, have not been detected during the survey of Turkish botanical dissertations, yet passionflower should be mentioned when the anti-stress herbal drugs are being discussed. *Passiflora* spp., especially *Passiflora incarnata* (passionflower, maypop) due to its medicinal uses, is the second of the most popular herbal drugs having a sedative, anxiolytic effect. There

is a respectable number of studies available in the literature regarding the sedative activity of passionflower, yet these are mostly based on an extract of the plant [644]. It is still debatable whether the main responsible compounds of passionflower are C-glycosides of apigenin and luteolin or harman alkaloids or maltol, and ethyl maltol or essential oils. Some researchers state that the flavonoids of passionflower extract such as schaftoside (**34**), isoschaftoside (**35**), isoorientin (**36**), orientin (**37**), isovitexin (**38**), vitexin (**39**), vitexin-2''-O-xyloside (**40**), vitexin-2''-O-glucoside (**41**), orientin-2''-O-glucoside (**42**), orientin-2''-xyloside (**43**), chrysin (**44**) might be the responsible of sedative, anxiolytic activity through GABA_A and benzodiazepine receptors [380, 645, 646, 647]. The flavonoids of *Passiflora* spp. have been studied mostly as a mixture of flavonoids, not as pure individual compounds, thus there is no information on which compound is the most effective one, yet. Compounds (**34-44**) are presented in Figure 14.

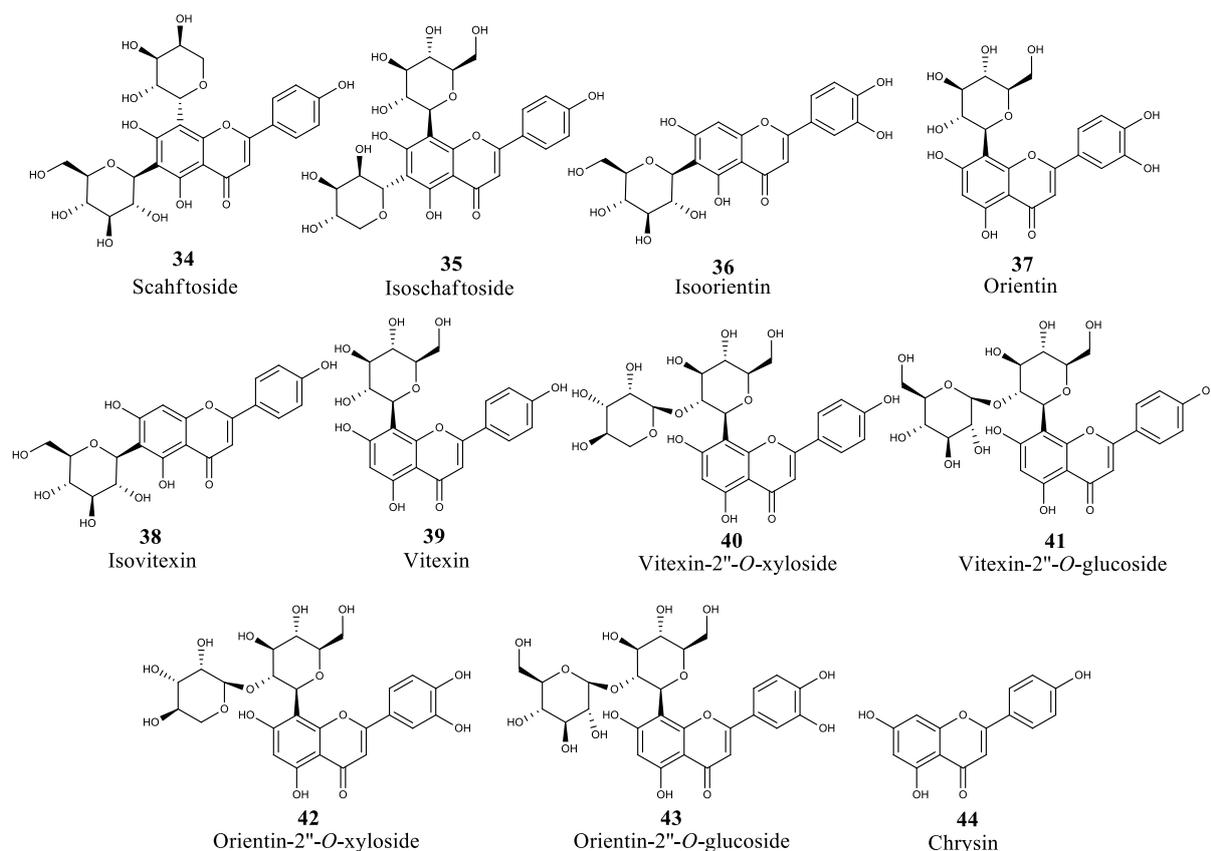


Figure 14. Chemical structure of active flavonoids of *Passiflora* sp.

Maltol (**45**) and ethylmaltol (**46**) which are members of hydrosoluble extract of *Passiflora* spp. were shown to be partially responsible for the sedative activity in mice, and ethylmaltol was found to be more effective than maltol [648]. Compounds (**45-46**) are presented in Figure 15.

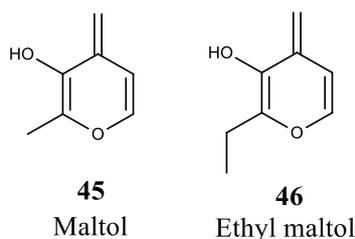


Figure 15. Chemical structure of active organic compounds of *Passiflora* sp.

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According to the studies on β -carboline alkaloids, it is found that harman alkaloids are active compounds on the central nervous system including sedative activity through binding the benzodiazepine, opiate, dopaminergic, and cholinergic receptors. Presence of the harman alkaloids (indole alkaloids, β -carboline alkaloids) in passion flowers, such as harmalol (**47**), harmol (**48**), harmane (**49**), harmaline (**50**), harmine (**51**), were confirmed but only in trace quantities [649]. Thus, the presence of harman alkaloids in passionflower extracts may be responsible for the sedative activity [650]. Harmaline (**50**) and harmine (**51**) from *Peganum harmala* herb are also studied and found effective on hallucinogenic-type monoamine oxidase A receptors [270, 478]. According to previous studies, the compounds show sedative activity and the drug is used for the treatment of drug addiction and alcoholism [270, 478]. Compounds (**47-51**) are presented in Figure 16.

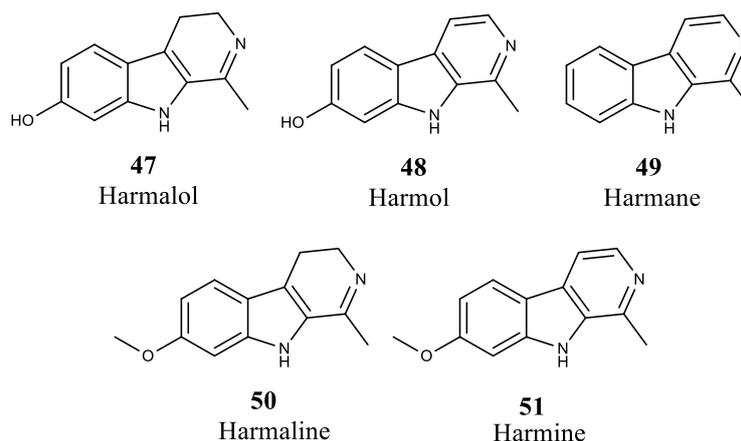


Figure 16. Chemical structure of active harman alkaloids of *Passiflora* sp. and *Peganum harmala*

4. Conclusion

As a result of the survey, 98 taxa were determined related to their anti-stress activity from the dissertations. The preparation method of the plants is mostly infusion or decoction from various parts of them such as aerial parts, roots, leaves, fruits, stems, etc. Lamiaceae and Asteraceae families with 23 and 20 plants have been found the first two families at using stress-related diseases. Based on the aforementioned literature survey, main phytochemical constituents that were responsible for the treatment of stress-related conditions have been identified as terpenoids, flavonoids and alkaloids. Structures of these compounds may provide new scaffolds for the discovery of novel anti-stress drugs. For example, similarities between humulone (**30**) and hyperforin (**33**) may provide new clues in the determination of structure/pharmacophore requirements of anti-stress compounds. These compounds and their interactions with prevalent receptors who are responsible for the sedative activity, etc. should be examined via *in silico* molecular drug discovery programs, also they should be investigated with *in vivo* or *in vitro* biological tests.

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