

Supporting Information

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Wound-Healing Activity of Some Species of *Euphorbia* L.

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Gülçin Saltan İşcan¹

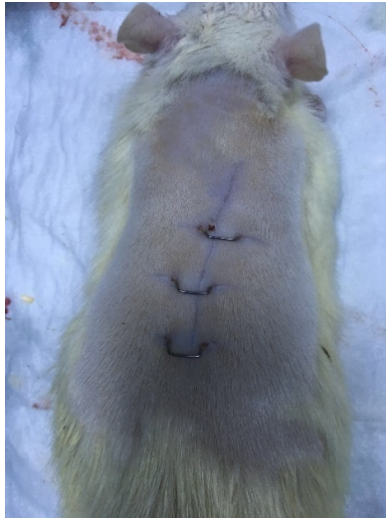
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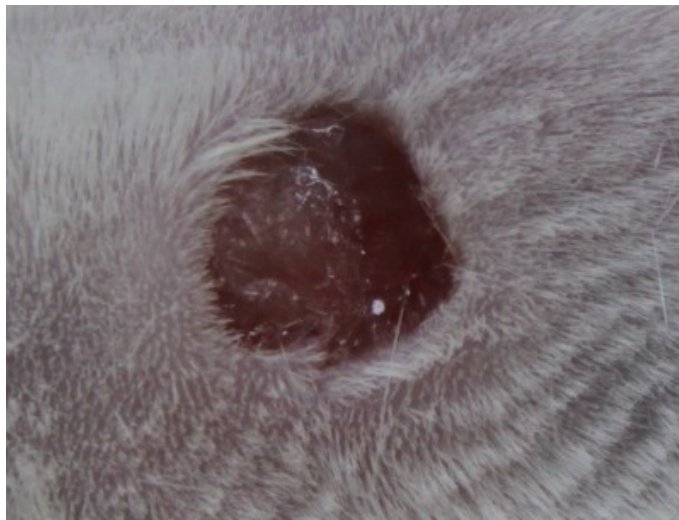
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S1: Incision Wound Model



S2: Excision Wound Model



T.C.
GAZİ ÜNİVERSİTESİ
REKTÖRLÜĞÜ
Hayvan Deneyleri Yerel Etik Kurul Başkanlığı

SAYI : B.30.2.GÜN.0.05.06.00/ 78- 10830
KONU :

28/05/2012

Sayın

Prof.Dr.Gülçin SALTAN
Ankara Üniversitesi Eczacılık Fakültesi
Farmakognози Anabilim Dalı
Öğretim Üyesi

Araştırmacı grubu Gülçin SALTAN, Esra AKKOL, İpek SÜNTAR ve Serkan ÖZBİLGİN'den oluşan, G.Ü.ET-12.049 kod numaralı ve "Türkiye'de Halk Arasında Yara İyileştirici Olarak Kullanılan Bazı Euphorbia L. Türleri Üzerinde Farmakognozik Araştırmalar" başlıklı araştırma öneriniz incelenmiş ve Gazi Üniversitesi Hayvan Deneyleri Yerel Etik Kurul Yönergesindeki ilkelere uygun olduğu saptanarak onaylanmasına oybirliği ile karar verilmiştir.

Bilgilerinizi saygılarımla rica ederim.

It is unanimously approved that the research project numbered G.Ü.ET-12.049 and entitled "Pharmacognostical Studies on Some Euphorbia L.Species Used as Wound Healing in Turkish Folk Medicine" is in compliance with Gazi University Animal Experiments Local Ethics Committee regulations.

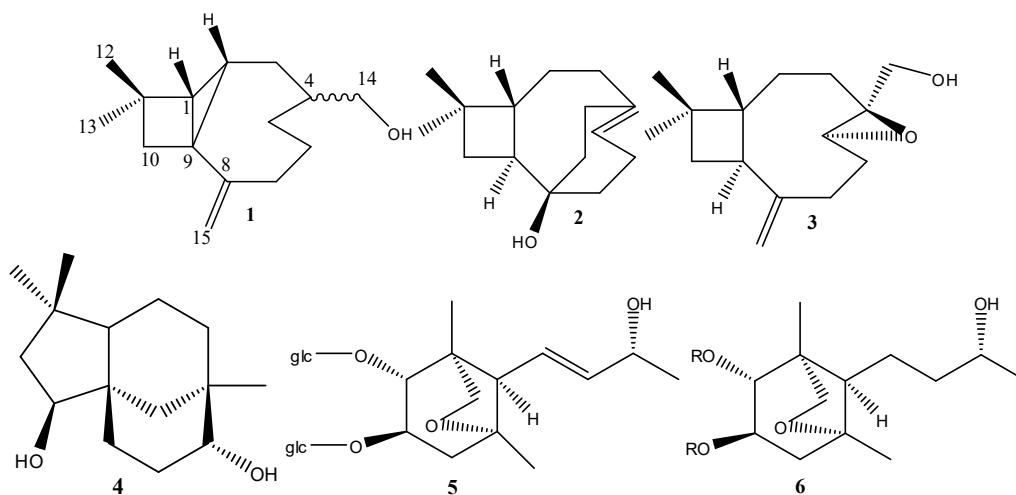
With my best regards.

EK : 1 Liste

Prof.Dr.Gökhan ALPASLAN
Gazi Üniversitesi
Hayvan Deneyleri Yerel Etik Kurul Başkanı



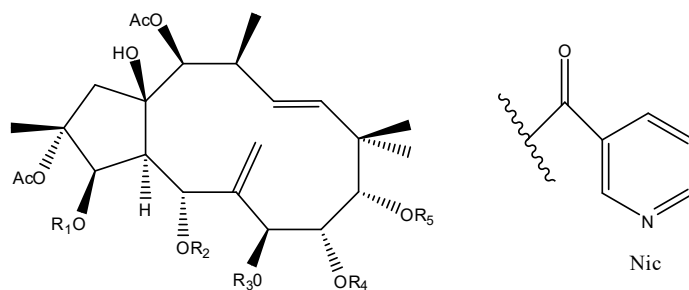
S3: Permission Letter of Local Ethics Committee



Name

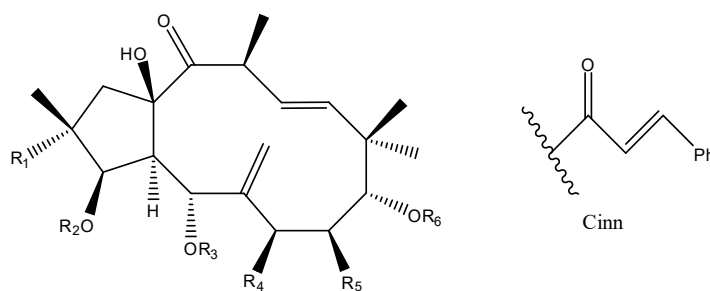
- 1 euphanginol
 2 cyclocaryophylla-4-en-8-ol
 3 4 β ,5 α -epoxy-4,5-dihydrocaryophyllen-14-ol
 4 clovandiol
 5 euphorbioside A
 6 euphorbioside B
-

S4: Chemical structure of some sesquiterpenoids isolated from *Euphorbia* species



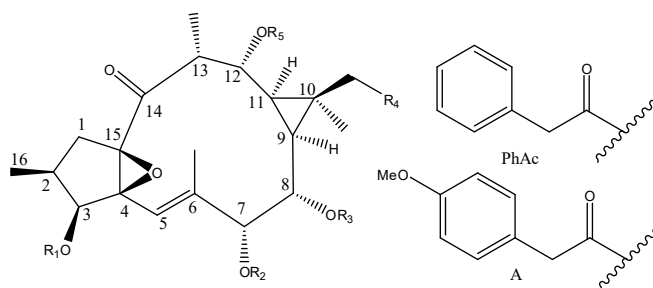
Name	R ₁	R ₂	R ₃	R ₄	R ₅
2,5,14-triacetoxy-3-benzoyloxy-7-isobutyryloxy-9-nicotinoyloxyjatropha-6(17),11E-diene-8,15-diol	Bz	Ac	iBu	H	Nic
2,5,7,8,9,14-hexaacetoxy-3-benzoyloxyjatropha-6(17),11 E-dien-15-ol	Bz	Ac	Ac	Ac	Ac
2,5,9,14-tetraacetoxy-3-benzoyloxy-7-isobutyryloxyjatropha-6(17),11E-diene-8,15-diol	Bz	Ac	iBu	H	Ac
2,5,7,14-tetraacetoxy-3-benzoyloxy-9-nicotinoyloxyjatropha-6(17),11E-diene-8,15-diol	Bz	Ac	Ac	H	Nic
2,5,7,9,14-pentaacetoxy-3-benzoyloxyjatropha-6(17),11 E-diene-8,15-diol	Bz	Ac	Ac	H	Ac
pepluanin A	Bz	Ac	Ac	Ac	Nic
pepluanin B	Bz	Ac	MeBu	H	Nic
pepluanin C	Bz	iBu	Bz	Ac	Ac

Bz : Benzoyl, Ac : Acetyl, iBu : isobutyryl, Nic : Nicoinoyl, MeBu : methylbutanoyl,



Name	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆
1,5,8,9-tetraacetoxy-2-benzoyloxyacetoxy-7-isobutyryloxyjatropha-6(17),11E-dien-14-5-acetoxy-3-benzoyloxy-9-cinnamoyloxy-15-hydroxyjatropha-6(17),11E-dien-14-one	OAc	BzOAc	Ac	OiBu	OAc	Ac
5-acetoxy-3-benzoyloxy-9-cinnamoyloxy-15-hydroxyjatropha-6(17),11E-dien-14-one	H	Bz	Ac	H	H	Cinn
5-acetoxy-3,9-dicinnamoyloxy-15-hydroxyjatropha-6(17),11E-dien-14-one	H	Cinn	Ac	H	H	Cinn

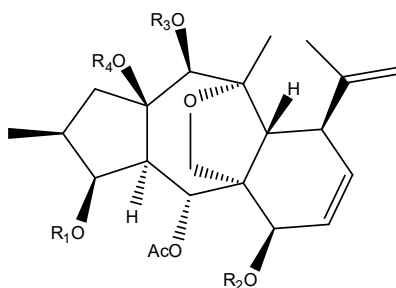
S5: Chemical structure of some diterpenoids (jatrophanes) isolated from *Euphorbia* species



Name	R ₁	R ₂	R ₃	R ₄	R ₅
3β,12α-diacetoxy-19-hydroxy-7α,8α-ditigloyloxyngol	Ac	Tigl	Tigl	OH	Ac
3β,12α-19-triacetoxy-7α-hydroxy-,8α-ditigloyloxyngol	Ac	H	Tigl	OAc	Ac
12α-19-diacetoxy-3β,7α-hydroxy-,8α-ditigloyloxyngol	H	H	Tigl	OAc	Ac
3β,8α,12α-triacetoxy-7α-isovaleryloxyngol	Ac	iVal	Ac	H	Ac
3β,8α,12α-triacetoxy-7α-angeloxyngol	Ac	Ang	Ac	H	Ac
3β,7α,12α-triacetoxy-8α-isovaleryloxyngol	Ac	Ac	iVal	H	Ac
3β,7α,12α-triacetoxy-8α-benzoyloxyngol	Ac	Ac	Bz	H	Ac
3β,12α-diacetoxy-8α-benzoyloxy-7α-hydroxyngol	Ac	H	Bz	H	Ac
3β,12α-diacetoxy-7α-benzoyloxy-8α-nicotinoyloxyngol	Ac	Bz	Nic	H	Ac
3β,12α,19-triacetoxy-8α-nicotinoyloxy-7α-phenylacetoxingol	Ac	PhAc	Nic	OAc	Ac
3β,12α,19-triacetoxy-8α-hydroxy-7α-phenylacetoxingol	Ac	PhAc	H	OAc	Ac

Tigl : tigloyl, Ang : angeloyl, iVal : isovaleryl, PhAc : Phenylacetyl,

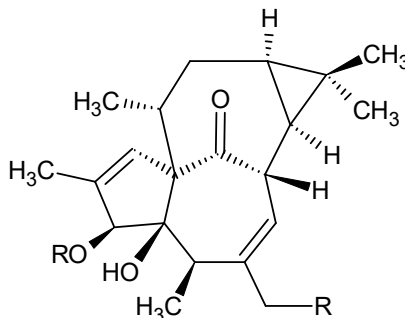
S6: Chemical structure of some diterpenoids (lathyranes) isolated from *Euphorbia* species



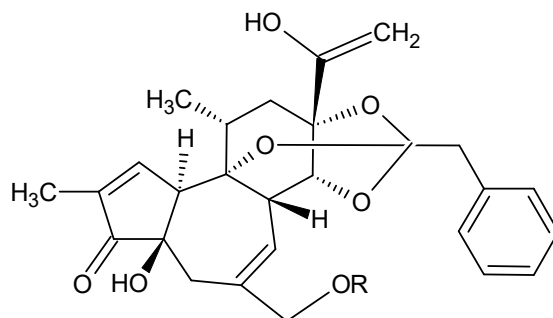
Name	R ₁	R ₂	R ₃	R ₄
5 α ,15 β -di- <i>O</i> -acetyl-7 β ,14 β -di- <i>O</i> -nicotinoyl-14-desoxo-3 β - <i>O</i> -propanoylmyrsinol	Pr	Nic	Nic	Ac
3 β ,5 α ,15 β -tri- <i>O</i> -acetyl-7 β ,14 β -di- <i>O</i> -nicotinoyl-14-desoxomyrsinol	Ac	Nic	Nic	Ac
3 β ,5 α ,15 β -tri- <i>O</i> -acetyl-7 β - <i>O</i> -benzoyl-14 β - <i>O</i> -nicotinoyl-14-desoxomyrsinol	Ac	Bz	Nic	Ac
5 α ,15 β -di- <i>O</i> -acetyl-7 β - <i>O</i> -benzoyl-14 β - <i>O</i> -nicotinoyl-14-desoxo-3 β - <i>O</i> -propanoylmyrsinol	Pr	Bz	Nic	Ac
5 α , 14 β ,15 β -tri- <i>O</i> -acetyl-7 β - <i>O</i> -benzoyl-14-desoxo-3 β - <i>O</i> -propanoylmyrsinol	Pr	Bz	Ac	Ac
5 α , 14 β ,15 β -tri- <i>O</i> -acetyl-7 β - <i>O</i> -nicotinoyl-14-desoxo-3 β - <i>O</i> -propanoylmyrsinol	Pr	Nic	Ac	Ac
5 α , 14 β -di- <i>O</i> -acetyl-15 β -hydroxy-7 β - <i>O</i> -nicotinoyl-14-desoxo-3 β - <i>O</i> -propanoylmyrsinol	Pr	Nic	Ac	H

Pr : propanoyl,

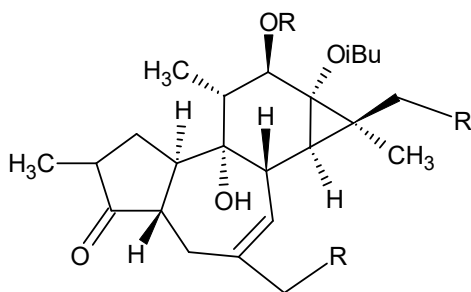
S7: Chemical structure of some diterpenoids (myrsinanes) isolated from *Euphorbia* species



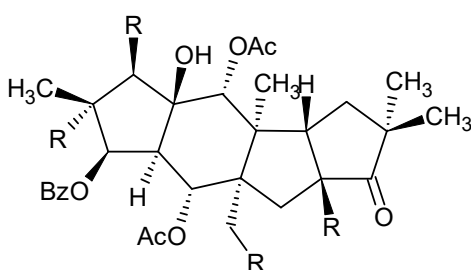
S8: Chemical skeleton structure of ingenane type diterpenoids isolated from *Euphorbia* species



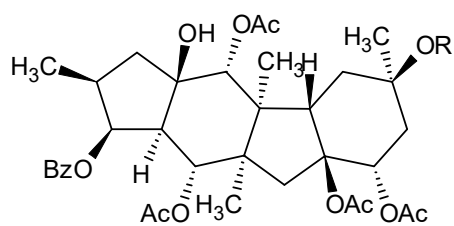
S9: Chemical skeleton structure of daphnane type diterpenoids isolated from *Euphorbia* species



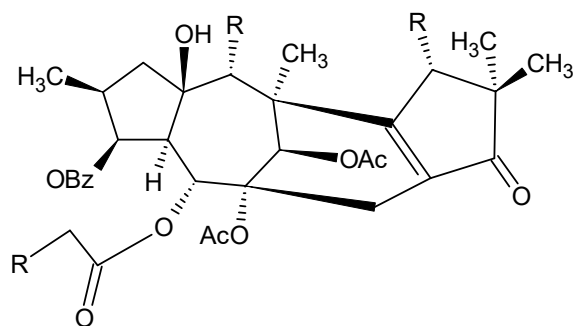
S10: Chemical skeleton structure of tigliane type diterpenoids isolated from *Euphorbia* species



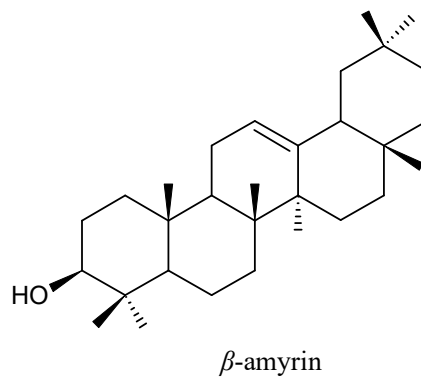
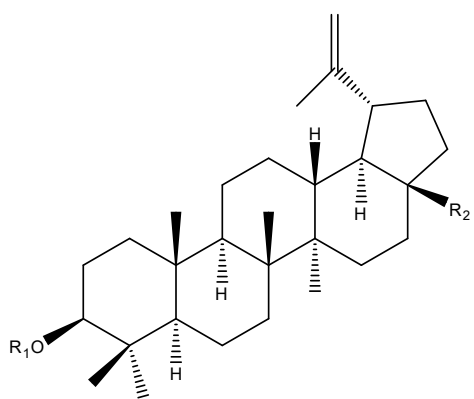
S11: Chemical skeleton structure of paraliene type diterpenoids isolated from *Euphorbia* species



S12: Chemical skeleton structure of pepluane type diterpenoids isolated from *Euphorbia* species



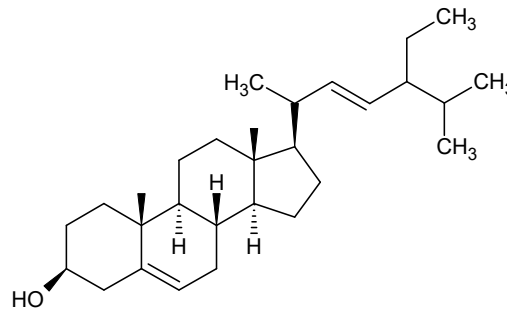
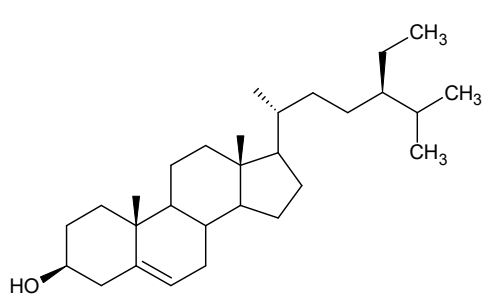
S13: Chemical skeleton structure of segetane type diterpenoids isolated from *Euphorbia* species



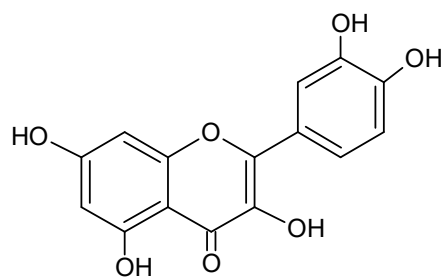
Name	R ₁	R ₂
Lupeol acetate	Ac	Me
Betulin	H	CH ₂ OH
Betulinic acid	H	COOH
Lupeol	H	Me

Me: methyl

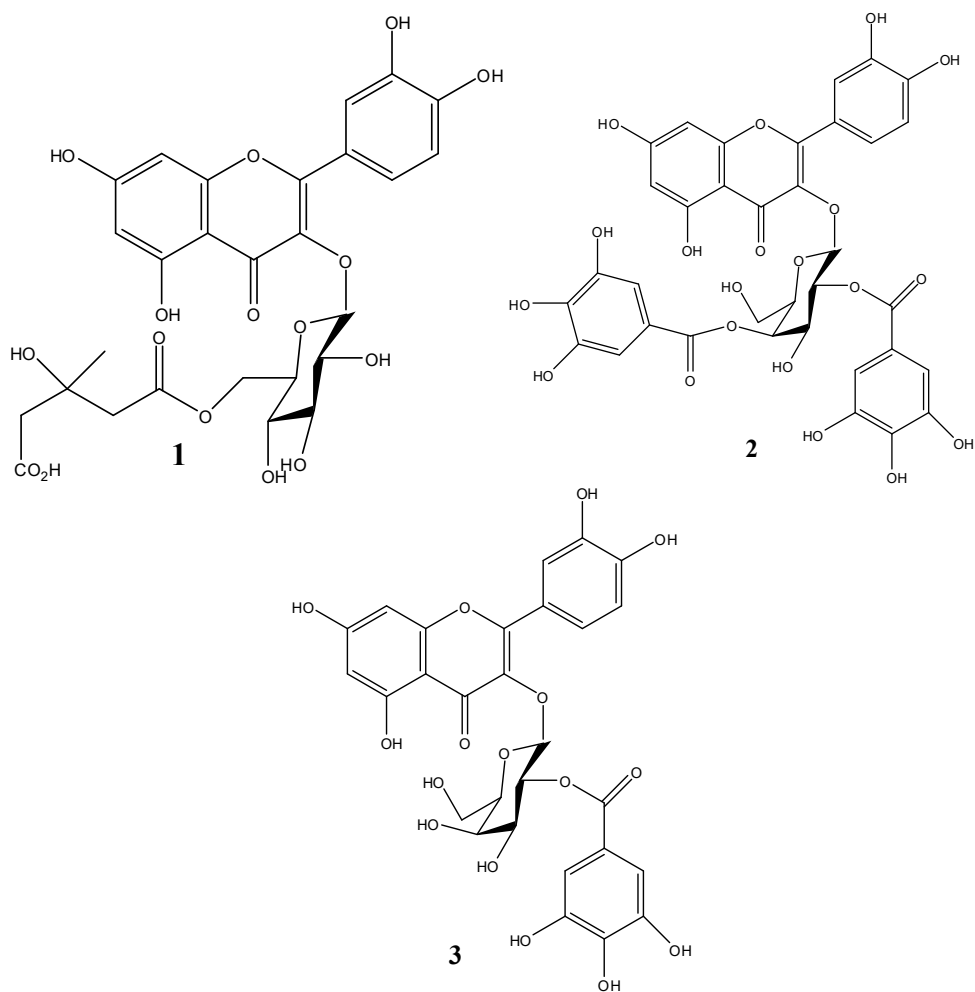
S14: Chemical structure of some triterpenoids isolated from *Euphorbia* species



S15: Chemical structure of *β*-sitosterol (left) and stigmasterol (right) isolated from *Euphorbia* species



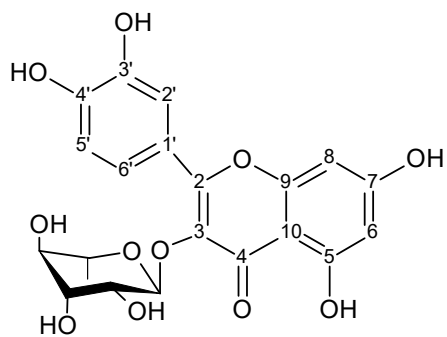
Quercetin



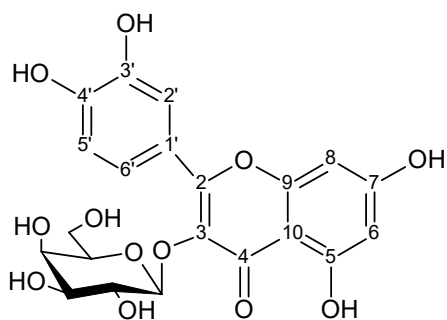
Name

- 1** quercetin 3-*O*-6'-(3-hydroxy-3-methylglutaryl)- β -D-glucopyranoside
2 quercetin 3-*O*-(2'',3''-digalloyl)- β -D-galactopyranoside
3 quercetin 3-*O*-(2''-galloyl)- β -D-galactopyranoside
-

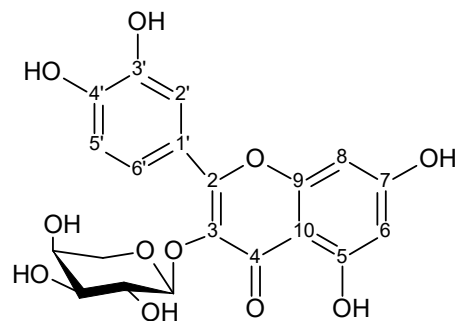
S16: Chemical structure of quercetin and some quercetin derivatives isolated from *Euphorbia* species



quercetin-3-*O*-rhamnoside (quercitrin)

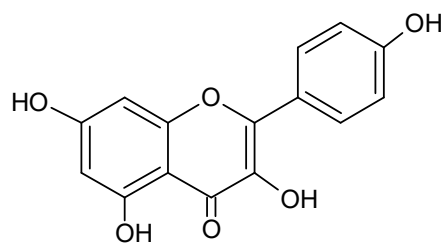


quercetin-3-*O*-galactoside (hyperoside)

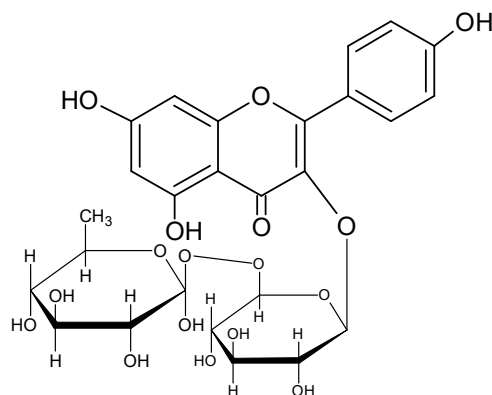


quercetin-3-*O*-arabinoside

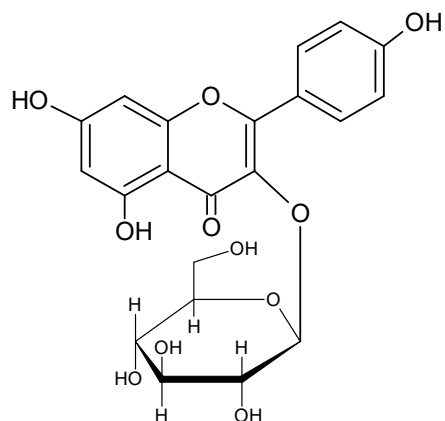
S17: Chemical structure of some quercetin derivatives isolated from *Euphorbia* species



Kaempferol

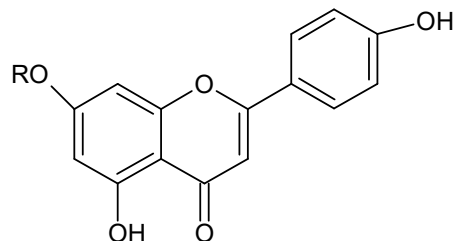


Kaempferol-3-*O*-rutinoside



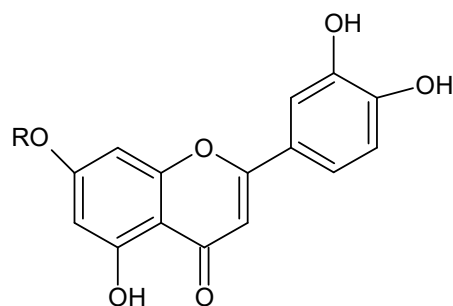
Kaempferol-3-*O*-glucoside

S18: Chemical structure of some kaempferol derivatives isolated from *Euphorbia* species

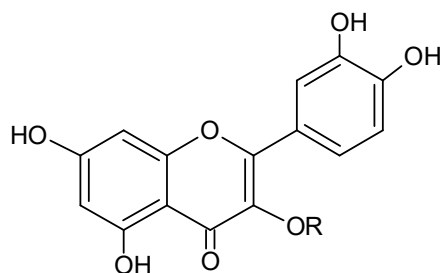


Name	R
Apigenin	H
Apigenin-7-O- β -D-glucopyranoside	Glu
Apigenin-7-O- β -D-rutinoside	Rham(1 \rightarrow 6) Glu
Apigenin-7-O- β -D-apiofuranosyl(1 \rightarrow 2)- β -D-glucopyranoside	Api(1 \rightarrow 2) Glu

Api: apigenin, Rham: rhamnose, Glu: glucose



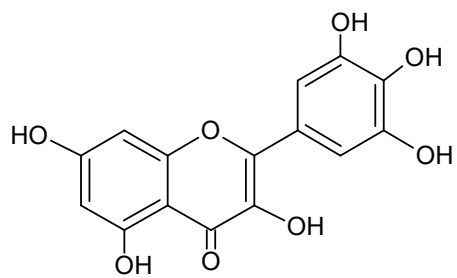
Name	R
Luteolin	H
Luteolin-7-O- β -D-glucopyranoside	Glu



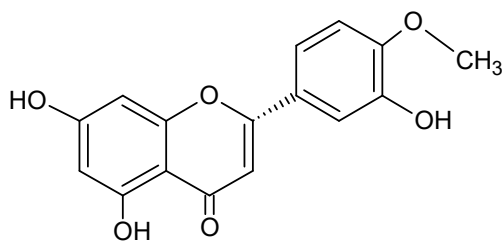
Name	R
Quercetin	H
Quercetin-3-O- α -L-rhamnosyl(1 \rightarrow 6)- β -D-galactoside	Rham (1 \rightarrow 6) Gal
Quercetin-3-O- β -D-glucopyranoside	Glu
Quercetin-3-O- β -D-galactoside	Gal

Rham: rhamnose; Gal: galactose

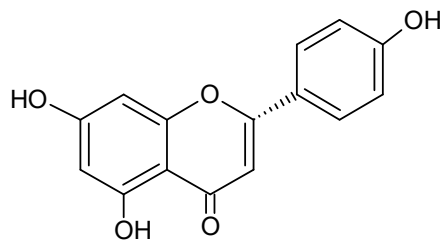
S19: Chemical structure of some flavonoids isolated from *Euphorbia* species



Myricetin

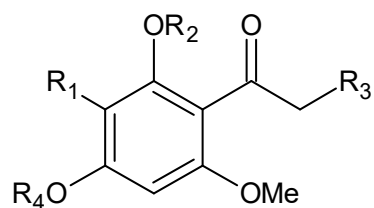


Hesperetin

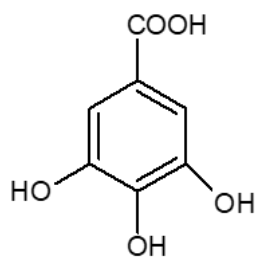


Naringenin

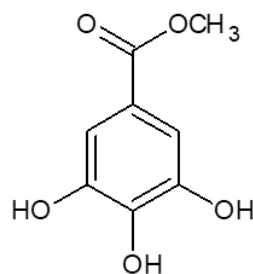
S20: Chemical structure of Myricetin, Hesperetin and Naringenin isolated from *Euphorbia* species



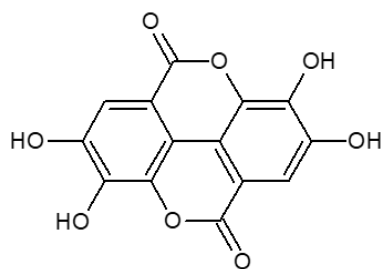
Name	R ₁	R ₂	R ₃	R ₄
2-hydroxy-4,6-dimethoxy acetophenone	H	H	H	Me
2,4,6-trimethoxy acetophenone	H	Me	H	Me
2-hydroxy-4,6-dimethoxy -3-methyl acetophenone	Me	H	H	Me
2,4,6-trimethoxy-3-methyl acetophenone	Me	Me	H	Me
2,2'-dihydroxy-4,6-dimethoxy-3-methyl acetophenone	Me	H	OH	Me
2,4-dihydroxy-6-methoxy acetophenone	H	H	H	H
2,4-dihydroxy-6-methoxy-3-methyl acetophenone	Me	H	H	H
2-hydroxy-6-methoxy-3-methyl acetophenone-4-β-D-glucopyranoside	Me	H	H	Glu



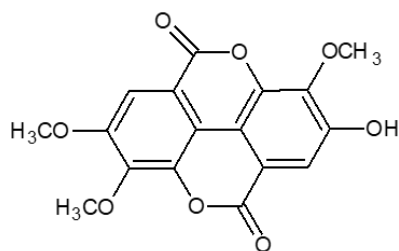
Gallic acid



Methyl gallate

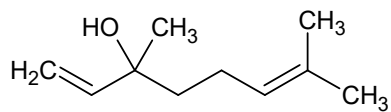


Ellagic acid

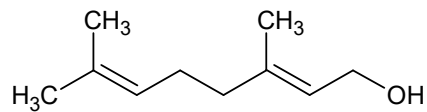


3,4,3'-tri-O-methyl ellagic acid

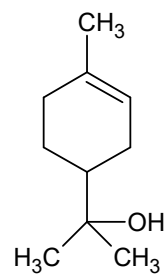
S21: Chemical structure of some phenolic compounds isolated from *Euphorbia* species



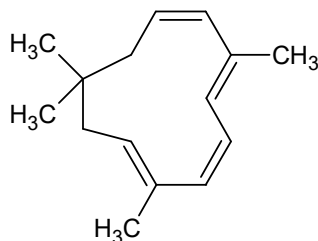
linalool



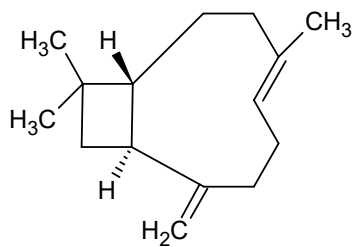
geraniol



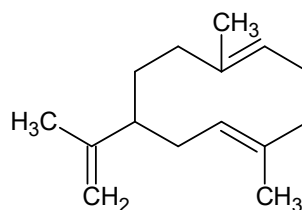
α -terpineol



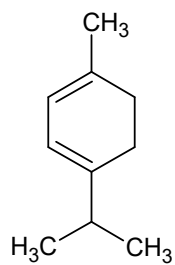
α -humulene



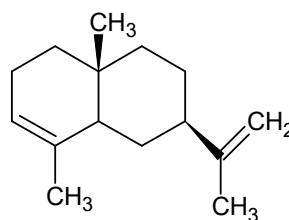
β -caryophyllene



germacrene-D



α -terpinene



α -selinene

S22: Chemical structure of some volatile compounds isolated from *Euphorbia* species