

Supporting Information

Rec. Nat. Prod. X:X (2020) XX-XX

Essential Oils of Three *Hypericum* Species from Colombia: Chemical Composition, Insecticidal and Repellent Activity Against *Sitophilus zeamais* Motsch. (Coleoptera: Curculionidae)

William R. Patiño-Bayona ¹, Erika Plazas ¹, Jenifer J. Bustos-Cortes ¹,
Juliet A. Prieto-Rodríguez ² and Oscar J. Patiño-Ladino ^{1*}

¹Department of Chemistry, Faculty of Sciences, Universidad Nacional de Colombia-Sede Bogotá,
111321 Bogotá, Colombia

²Department of Chemistry, Faculty of Sciences, Pontificia Universidad Javeriana-Sede Bogotá,
110231 Bogotá, Colombia

Table of Contents	Page
Figure S1: Chromatographic profile obtained for the essential oil of leaves and stems of <i>H. mexicanum</i> with non-polar column (DB-5MS)	2
Figure S2: Chromatographic profile obtained for the essential oil of leaves and stems of <i>H. mexicanum</i> with polar column Polar (HP-INNOWax)	3
Figure S3: Chromatographic profile obtained for the essential oil of leaves and stems of <i>H. myricariifolium</i> with non-polar column (DB-5MS)	4
Figure S4: Chromatographic profile obtained for the essential oil of leaves and stems of <i>H. myricariifolium</i> with polar column Polar (HP-INNOWax)	5
Figure S5: Chromatographic profile obtained for the essential oil of leaves and stems of <i>H. juniperinum</i> with non-polar column (DB-5MS)	6
Figure S6: Chromatographic profile obtained for the essential oil of leaves and stems of <i>H. juniperinum</i> with polar column Polar (HP-INNOWax)	6
Table S1: Information of the collected species	7
Table S2: Screening for preliminary insecticidal activity	7
Table S3: Fumigant activity with and without contact	7
Table S4: Topical contact toxicity results	7
Table S5: Results of the repellency assay with olfactometer	7
Table S6: ANOVA table for lethal concentrations of fumigant assay	8

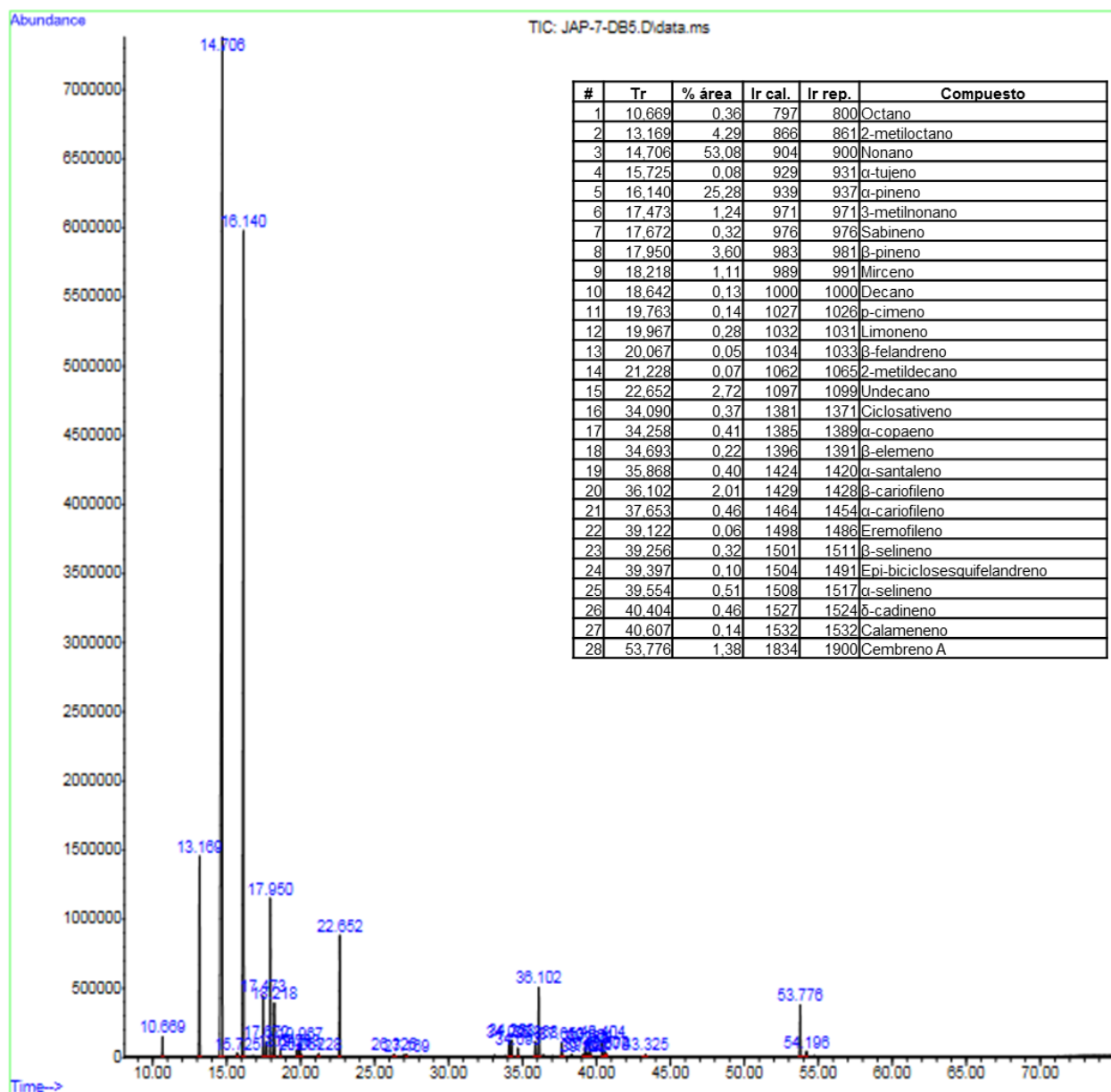


Figure S1: Chromatographic profile obtained for the essential oil of leaves and stems of *H. mexicanum* with non-polar column (DB-5MS)

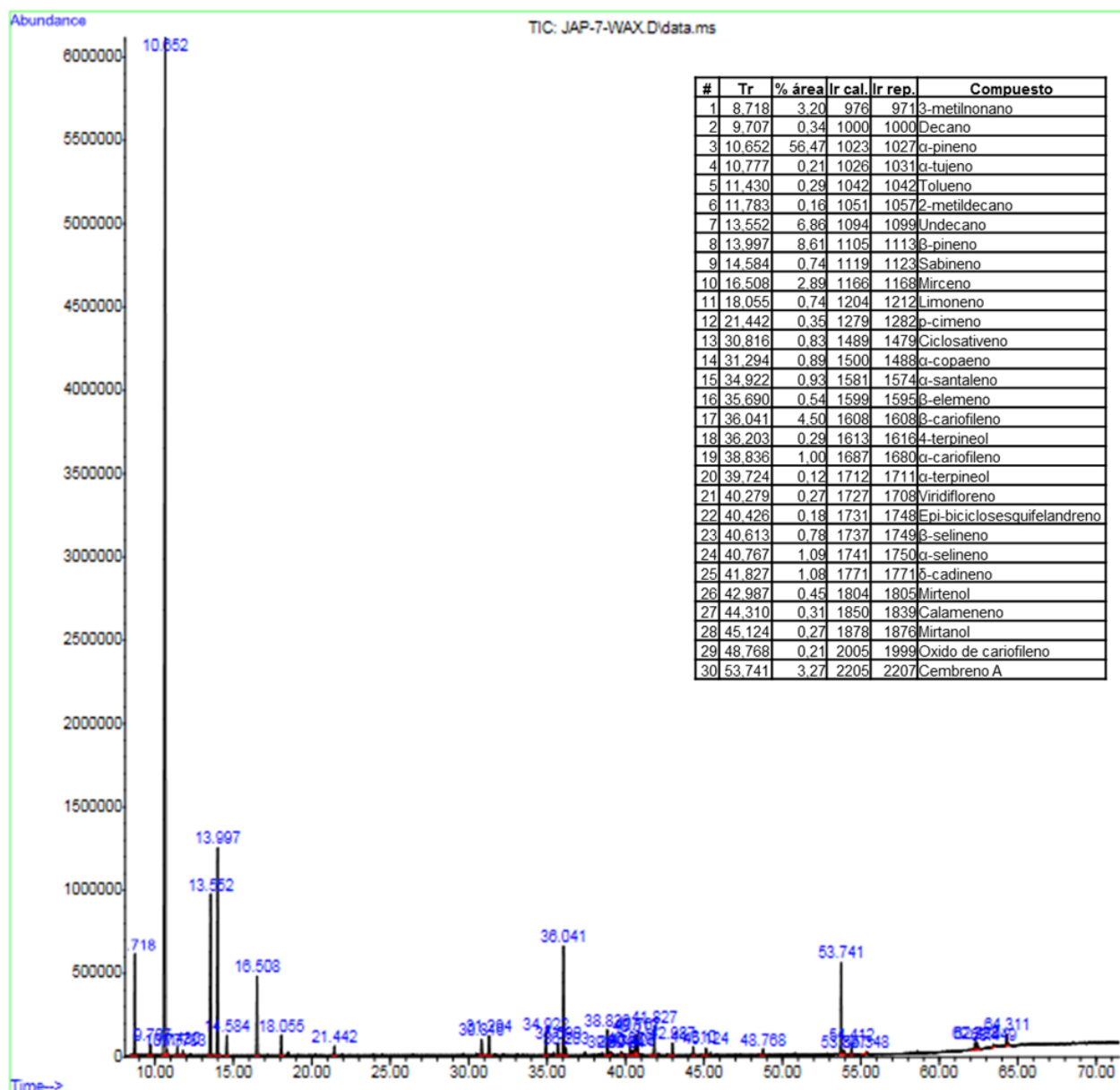


Figure S2: Chromatographic profile obtained for the essential oil of leaves and stems of *H. mexicanum* with polar column (HP-INNOWax)

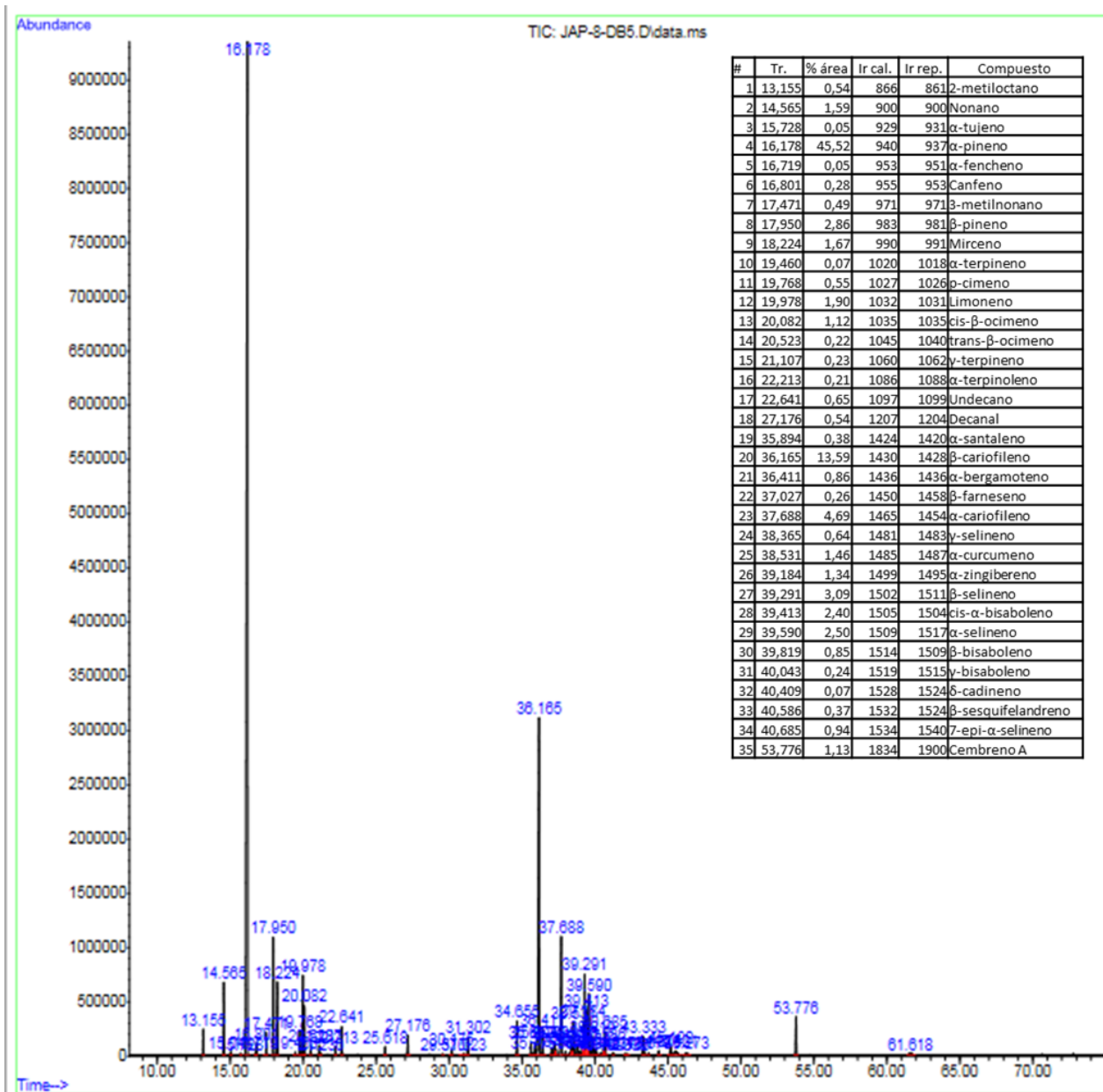


Figure S3: Chromatographic profile obtained for the essential oil of leaves and stems of *H. myricariifolium* with non-polar column (DB-5MS)

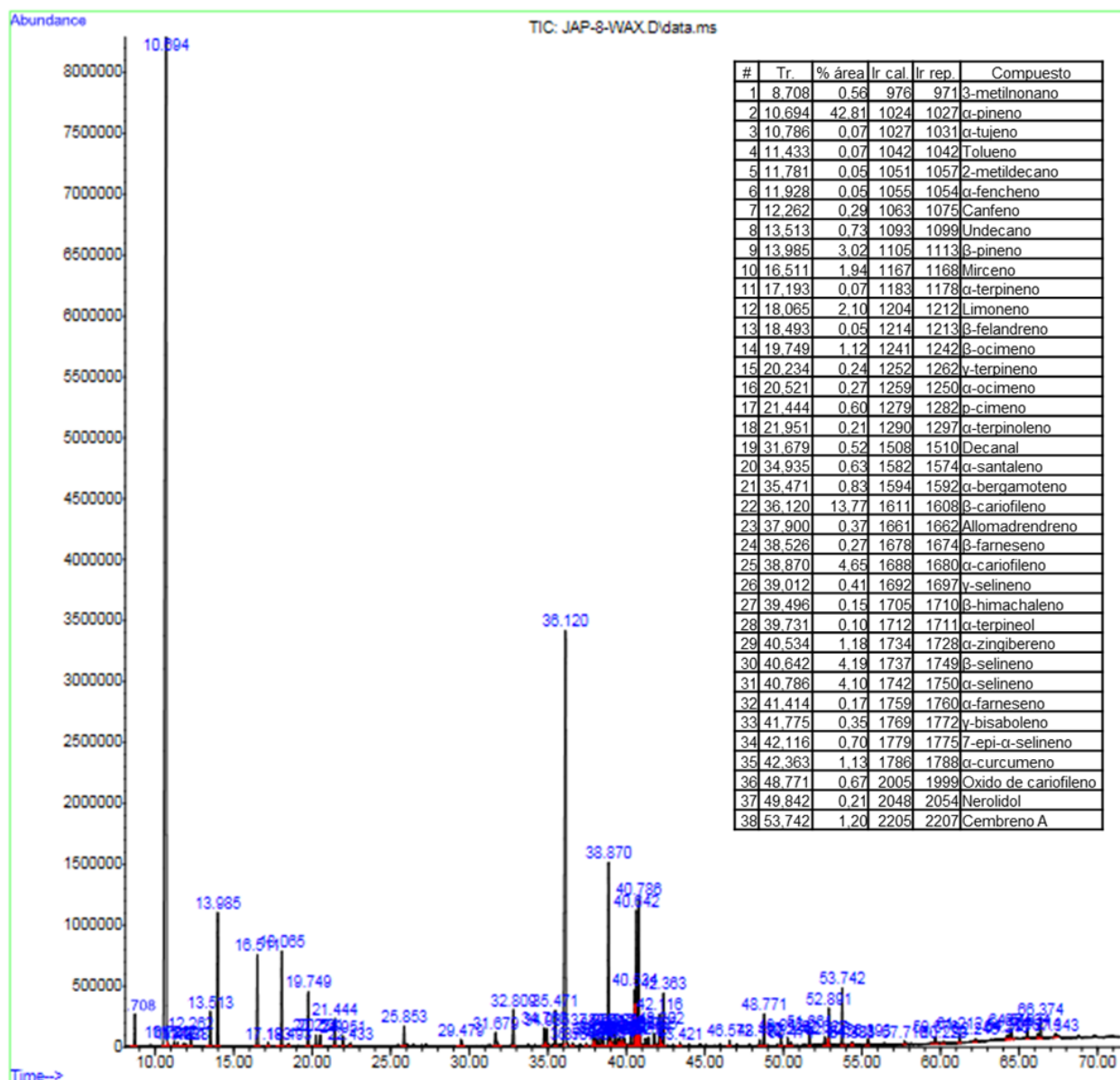


Figure S4: Chromatographic profile obtained for the essential oil of leaves and stems of *H. myricariifolium* with polar column (HP-INNOWax)

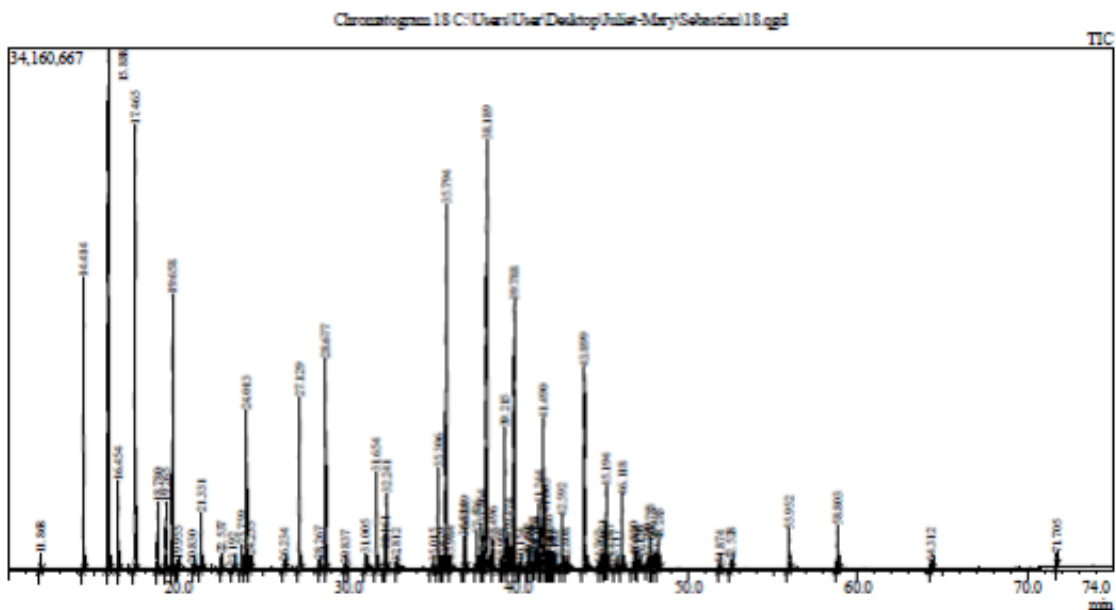


Figure S5: Chromatographic profile obtained for the essential oil of leaves and stems of *H. juniperinum* with non-polar column (DB-5MS)

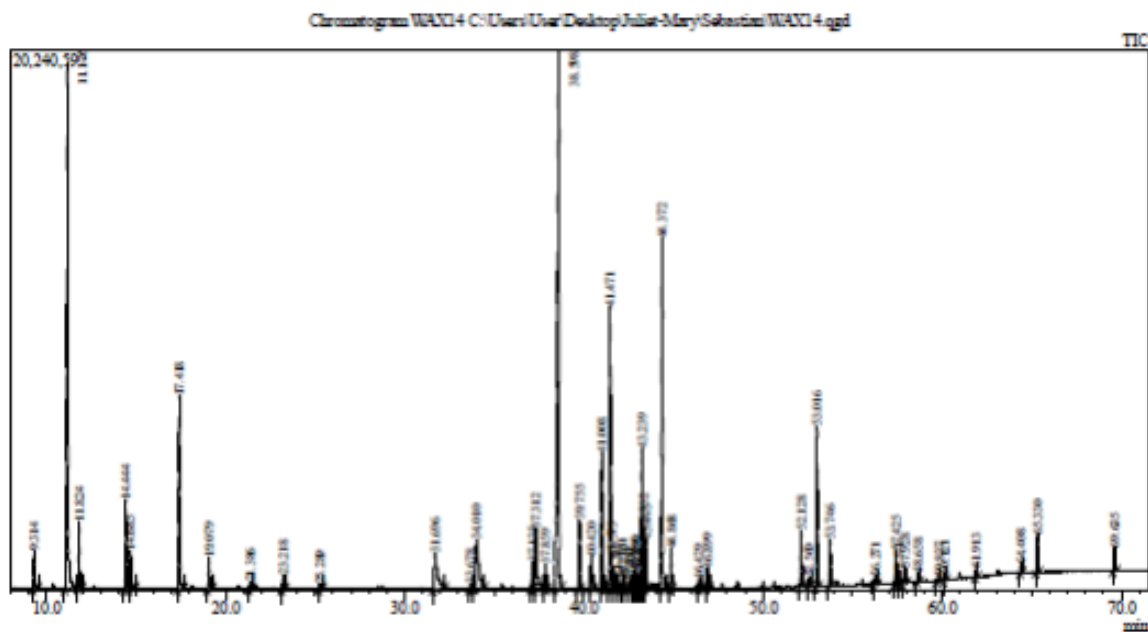


Figure S6: Chromatographic profile obtained for the essential oil of leaves and stems of *H. juniperinum* with polar column (HP-INNOWax)

Table S1: Information of the collected species

Species	Collection number	Collection link
<i>H. mexicanum</i> L.	JBB10659	http://herbario.jbb.gov.co/especimen/13027
<i>H. juniperinum</i> Kunth	JBB00348	http://herbario.jbb.gov.co/especimen/7643
<i>H. myricariifolium</i> Hieron	JBB00350	http://herbario.jbb.gov.co/especimen/7651

Link with the Herbarium information

<http://sweetgum.nybg.org/science/ih/herbarium-details/?irn=223644>

Table S2: Screening for preliminary insecticidal activity

Species	Mortality % (500 μ L/L air)
<i>Hypericum mexicanum</i>	87.0 \pm 6.0
<i>Hypericum myricariifolium</i>	45.0 \pm 8.0
<i>Hypericum juniperinum</i>	10.0 \pm 5.0

Table S3: Fumigant activity with and without contact

Species	With contact	Without contact
	Mean \pm SD	Mean \pm SD
<i>H. mexicanum</i>	86.7 \pm 6.0	94.0 \pm 5
<i>H. myricariifolium</i>	45.2 \pm 8.0	56.0 \pm 5

Table S4: Topical contact toxicity results

Species	0.1 μ L	0.15 μ L	0.20 μ L
<i>H. mexicanum</i>	0.00 \pm 0	0.00 \pm 0	0.00 \pm 60
<i>H. myricariifolium</i>	0.00 \pm 0	33.33 \pm 5.77	36.67 \pm 5.77

Table S5: Results of the repellency assay with olfactometer

Essential Oil	Concentration ($\mu\text{L/L}$ air)	Repellency percentage \pm SD					
		2 hours		6 hours		24 hours	
<i>H. mexicanum</i>	6.2	90.0 \pm 5.8	V	80.0 \pm 10.0	IV	73.3 \pm 6.7	IV
	10.0	80.0 \pm 11.5	IV	86.7 \pm 6.7	V	73.3 \pm 6.7	IV
	14.1	83.3 \pm 6.7	V	90.0 \pm 10.0	V	90.0 \pm 0.0	V
	18.0	90.0 \pm 5.8	V	80.0 \pm 10.0	IV	93.3 \pm 3.3	V
	22.7	90.0 \pm 10.0	V	90.0 \pm 10.0	V	86.7 \pm 3.3	V
<i>H. myricariifolium</i>	6.2	93.3 \pm 3.3	V	93.3 \pm 6.7	V	90.0 \pm 5.8	V
	10.0	93.3 \pm 3.3	V	86.7 \pm 8.8	V	80.0 \pm 0.0	IV
	14.1	96.7 \pm 3.3	V	96.7 \pm 3.3	V	83.3 \pm 8.8	V
	18.0	90.0 \pm 5.8	V	93.3 \pm 3.3	V	96.7 \pm 3.3	V
	22.7	100.0 \pm 0.0	V	100.0 \pm 0.0	V	90.0 \pm 0.0	V

Table S6: ANOVA table for lethal concentrations of fumigant assay

Dependent variable: LC_{50} ($\mu\text{L/L}$)(95% Confidence limit)					
Essential oil	<i>H. mexicanum</i>	<i>H. myricariifolium</i>			
LC_{50}	205.5	468.8			
	268.2	554.6			
	210.9	417.3			
	219.9	442.0			
	212.2	432.8			
Mean (95% Confidence limit)	223.5 (173.6 – 262.0)	463.1 (338.3 – 559.9)			
Slope	0.005	0.002			
Intercept	-1.14	-0.779			
P-value	1.6E-13	2.10E-13			
ANOVA					
	Sum. of squares	gI score	Square mean	F	Sig.
Between groups	143651.971	1	143651.971	79.314	0.000020
Within groups	14489.422	8	1811.178		
Total	158141.392	9			