

Supporting Information

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

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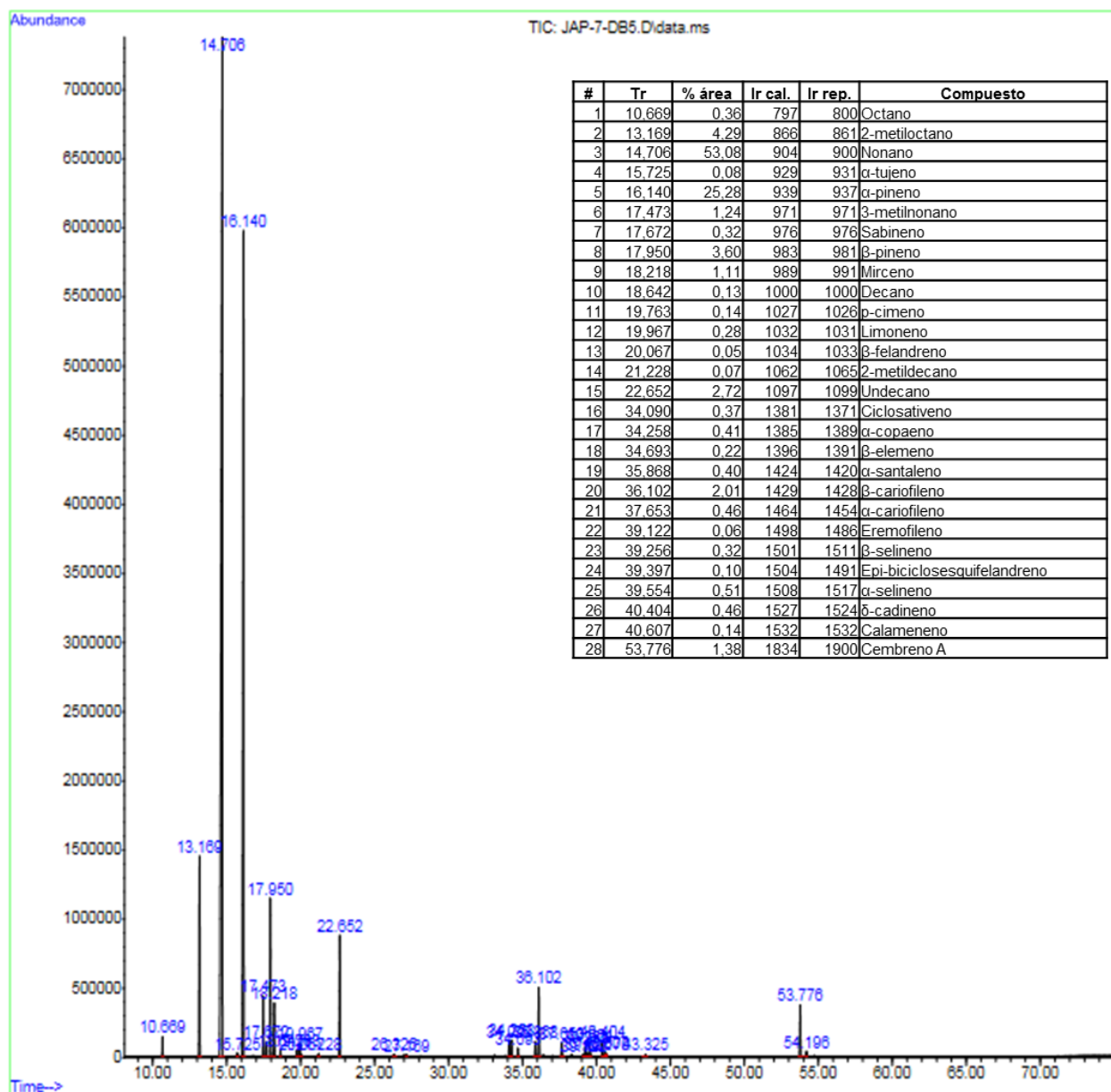


Figure S1: Chromatographic profile obtained for the essential oil of leaves and stems of *H. mexicanum* with non-polar column (DB-5MS)

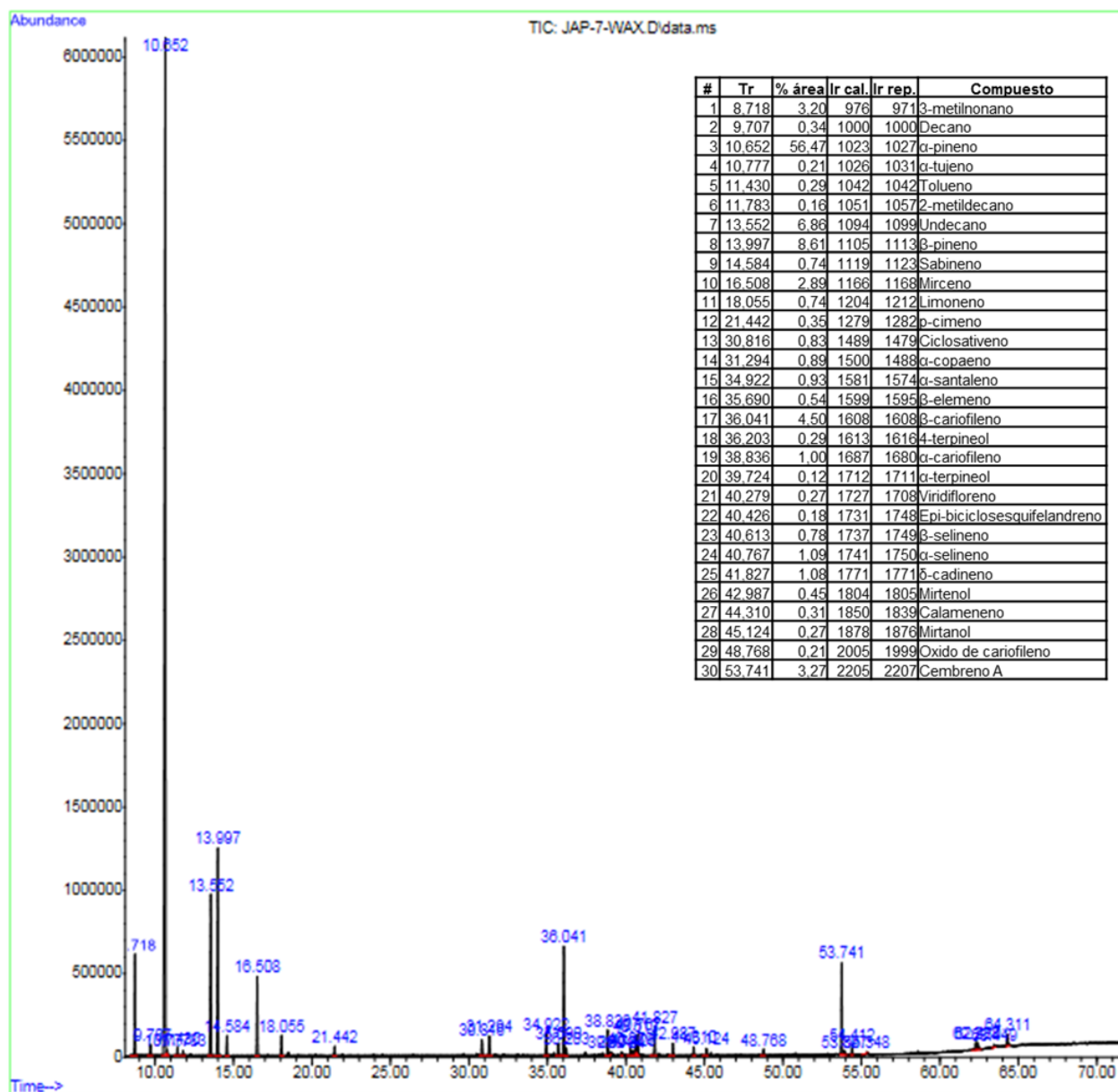


Figure S2: Chromatographic profile obtained for the essential oil of leaves and stems of *H. mexicanum* with polar column (HP-INNOWax)

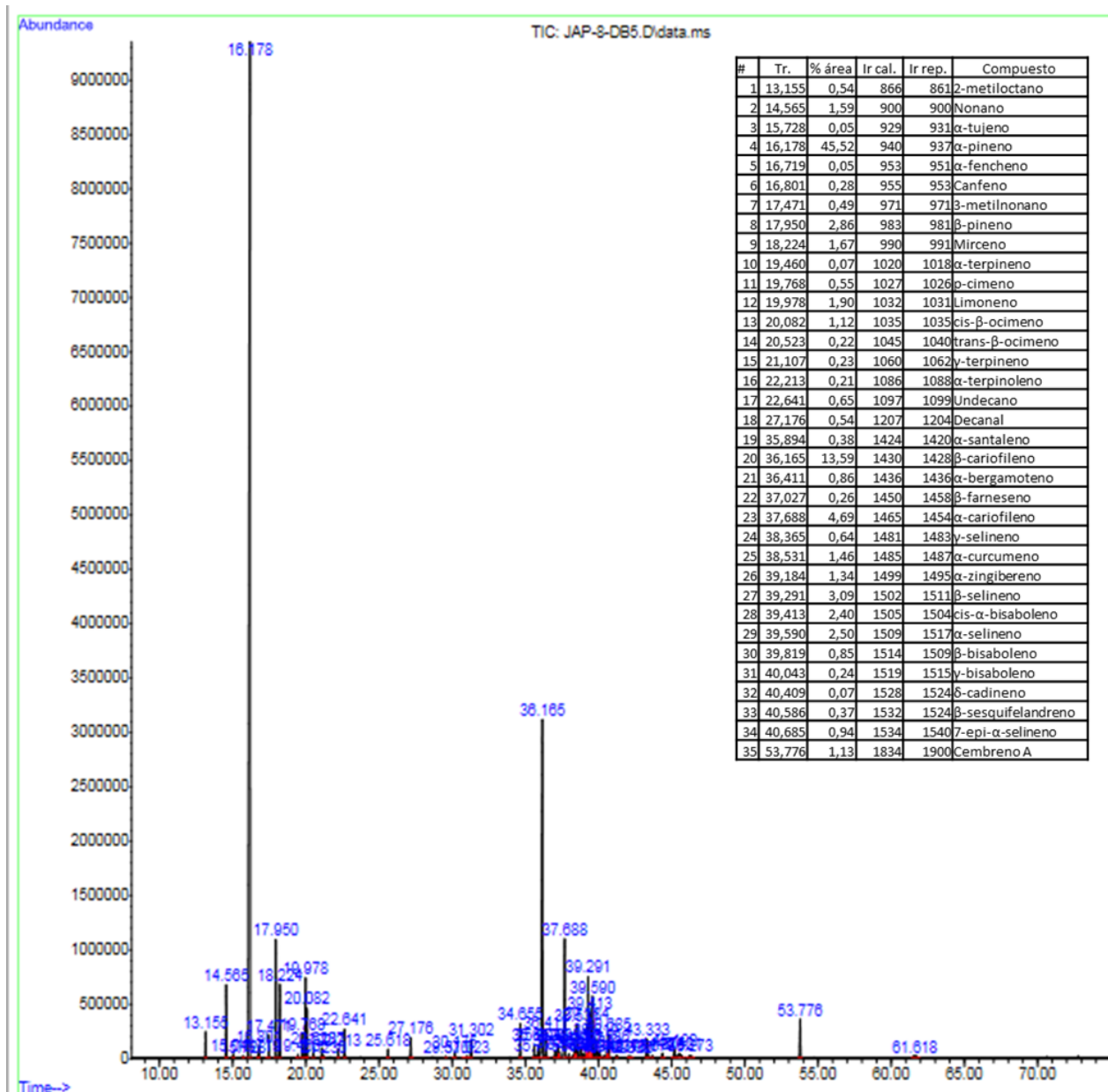


Figure S3: Chromatographic profile obtained for the essential oil of leaves and stems of *H. myricariifolium* with non-polar column (DB-5MS)

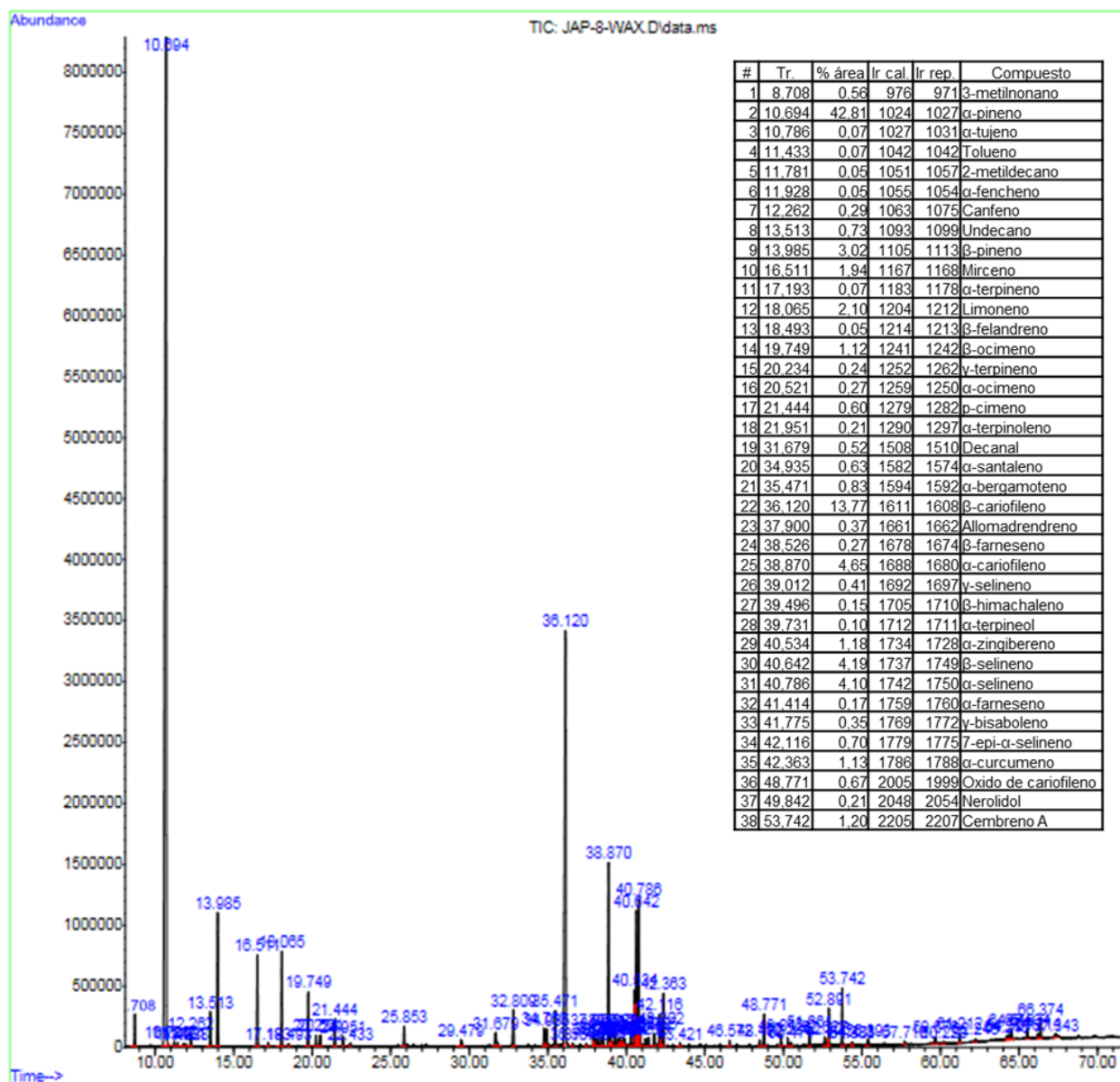


Figure S4: Chromatographic profile obtained for the essential oil of leaves and stems of *H. myricariifolium* with polar column (HP-INNOWax)

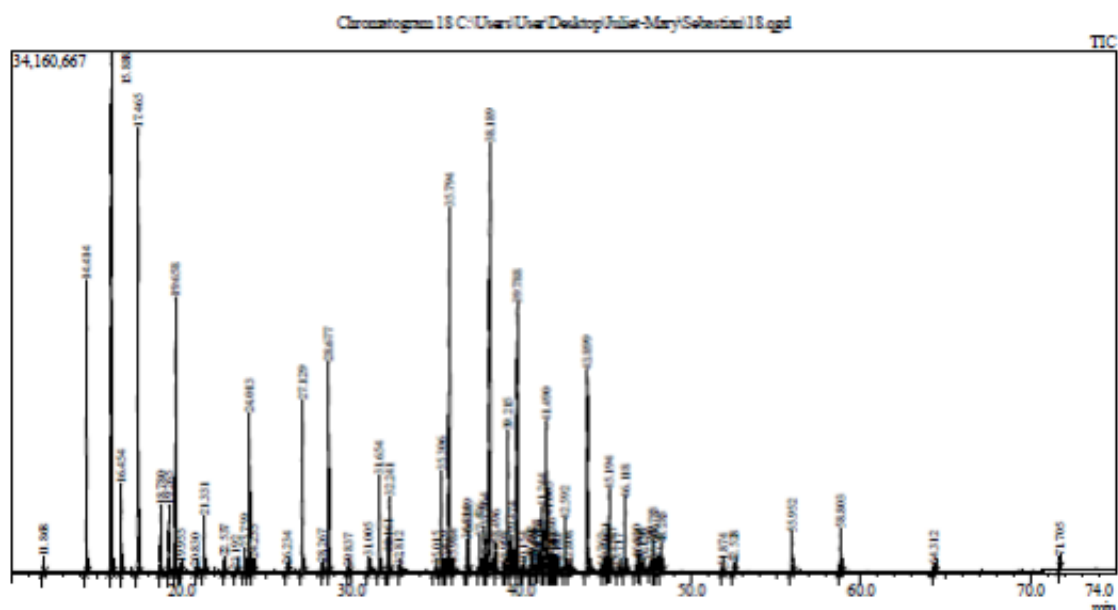


Figure S5: Chromatographic profile obtained for the essential oil of leaves and stems of *H. juniperinum* with non-polar column (DB-5MS)

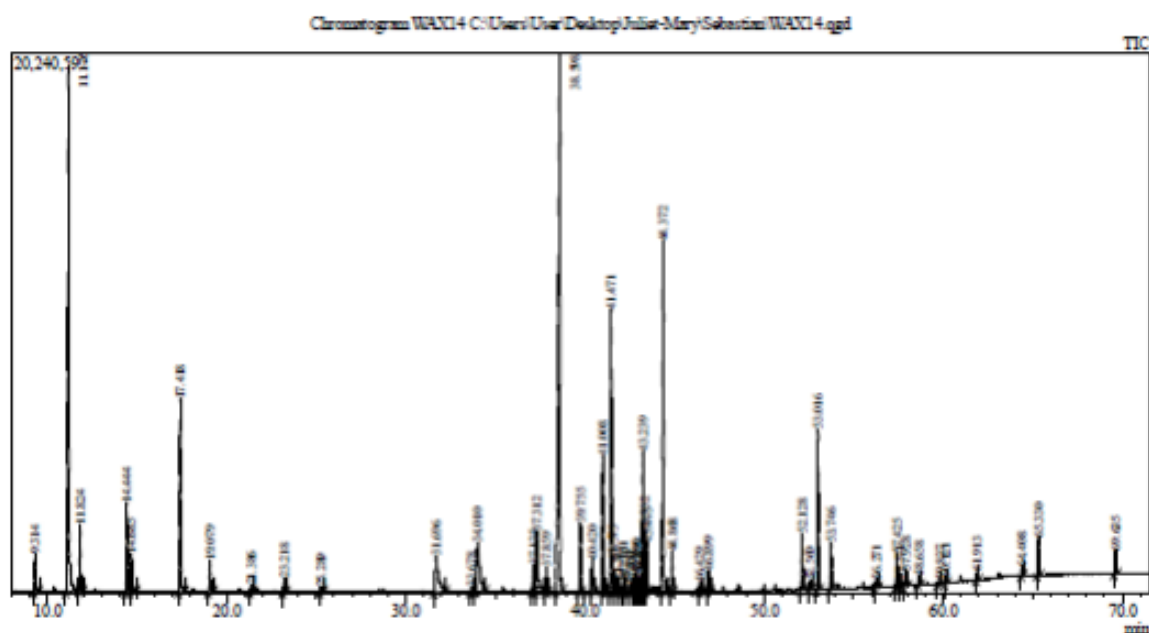


Figure S6: Chromatographic profile obtained for the essential oil of leaves and stems of *H. juniperinum* with polar column (HP-INNOWax)

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 µL/L air)
<i>Hypericum mexicanum</i>	87.0 ± 6.0
<i>Hypericum myricariifolium</i>	45.0 ± 8.0
<i>Hypericum juniperinum</i>	10.0 ± 5.0

Table S3: Fumigant activity with and without contact

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

Table S4: Topical contact toxicity results

Species	0.1 µL	0.15 µL	0.20 µL
<i>H. mexicanum</i>	0.00 ± 0	0.00 ± 0	0.00 ± 60
<i>H. myricariifolium</i>	0.00 ± 0	33.33 ± 5.77	36.67 ± 5.77

Table S5: Results of the repellency assay with olfactometer

Essential Oil	Repellency percentage \pm SD						
	Concentration (μ L/L air)	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 (μL/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			