

SUPPLEMENTARY MATERIAL

Volatile Terpenes and Terpenoids from the Workers and Queens of *Monomorium chinense* (Hymenoptera: Formicidae)

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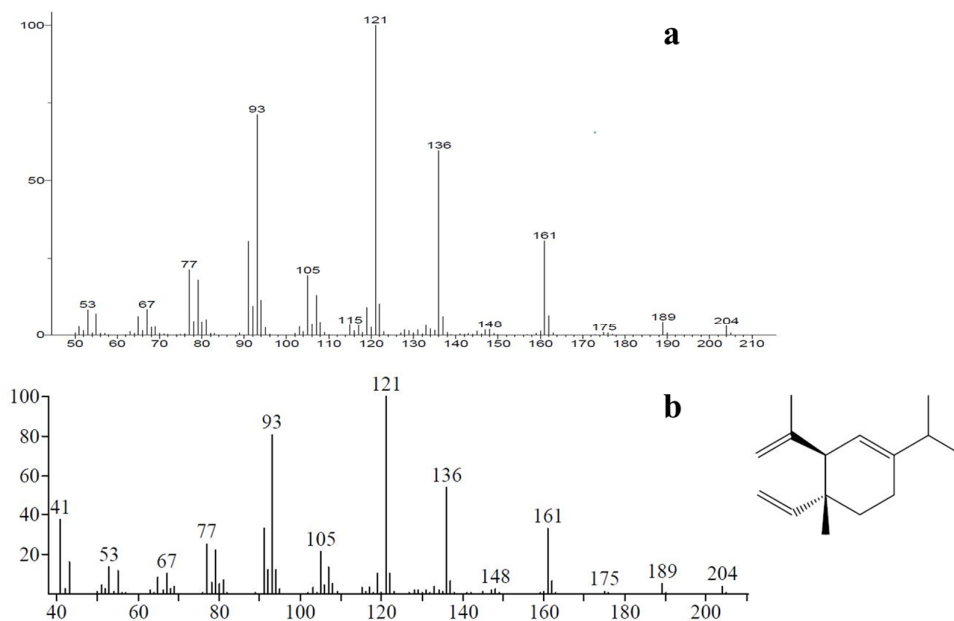


Figure S1 Mass spectrum of peak 1 (a) from *Monomorium chinense* workers and δ-elemene (b) from the literature-book, showing the match of mass spectra.

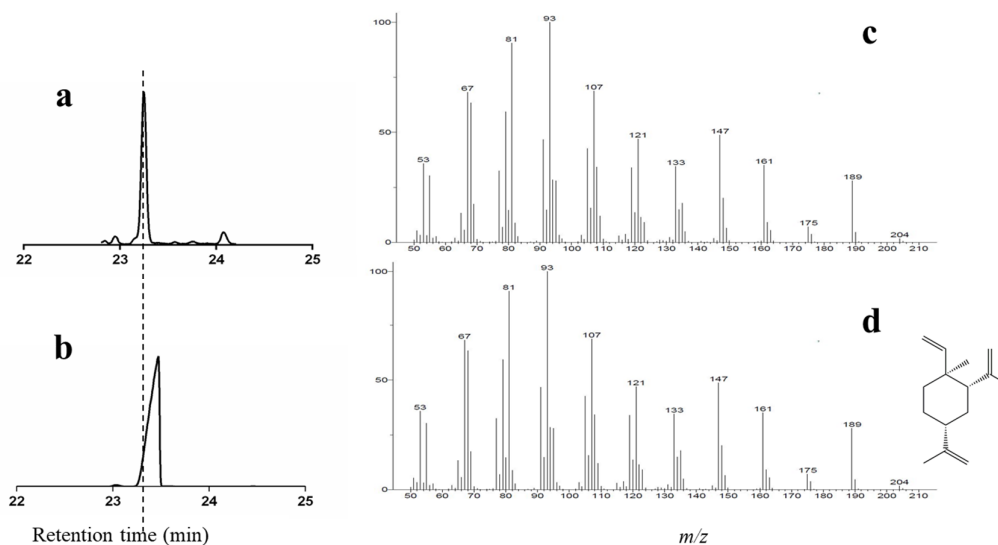


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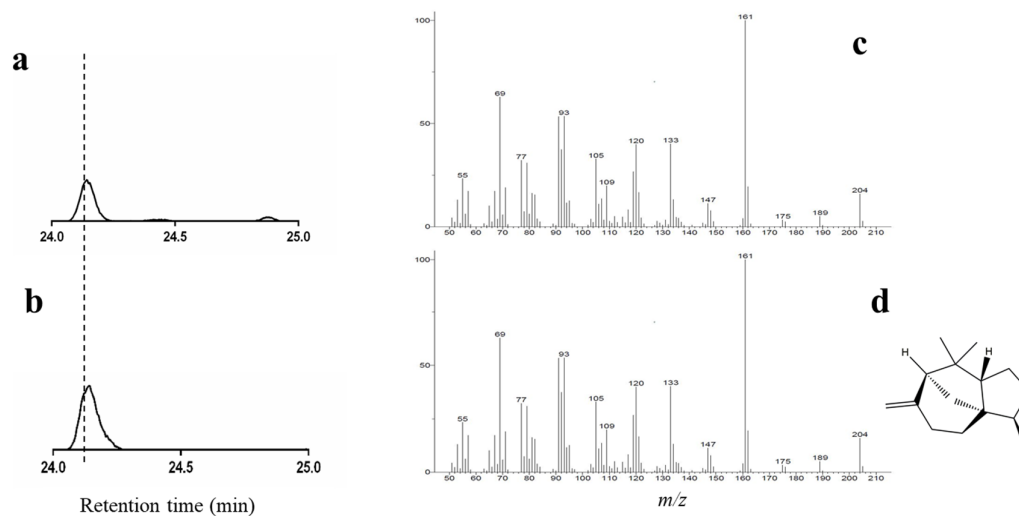


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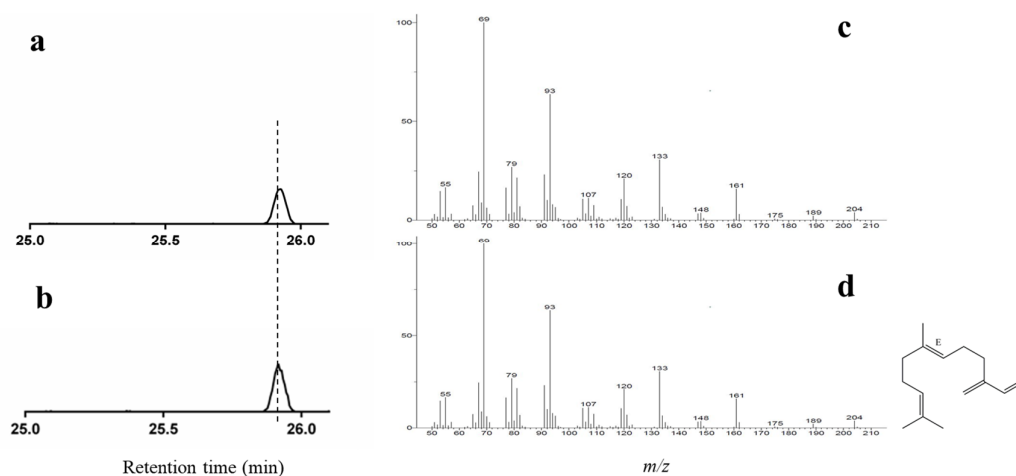


Figure S4 Total ion chromatograms of extract of *Monomorium chinense* workers (**a**) and standard (E)- β -farnesene (**b**), showing the match of retention times; Mass spectra of peak 4 (**c**) and standard (E)- β -farnesene (**d**), showing the match of mass spectra.

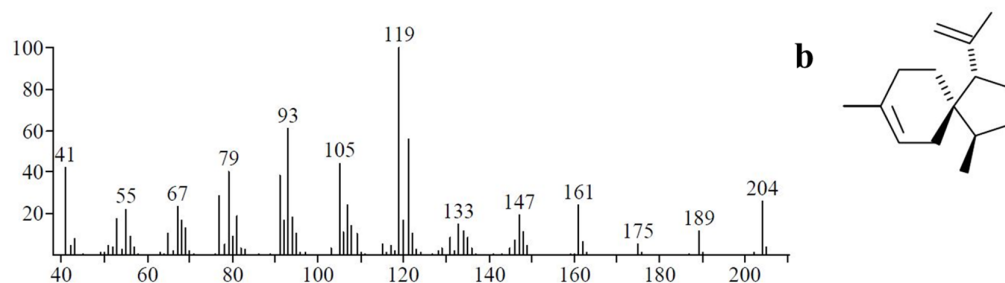
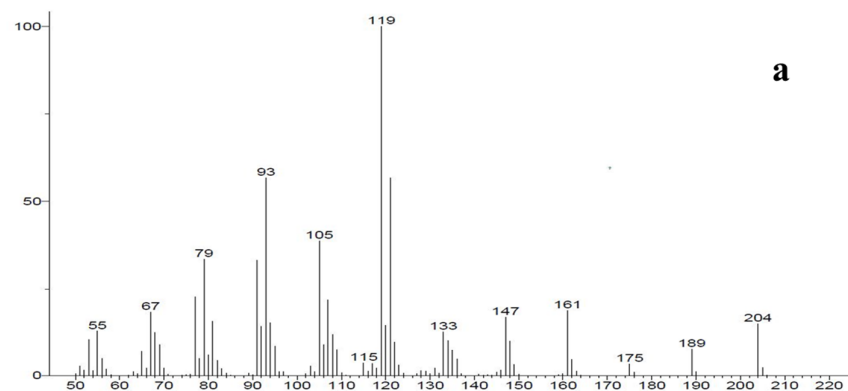


Figure S5 Mass spectra of peak 5 (a) from *Monomorium chinense* workers and β -acoradiene (b) from the literature-book, showing the match of mass spectra.

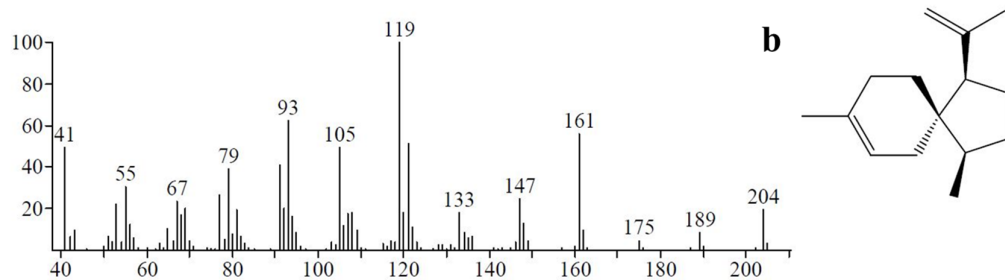
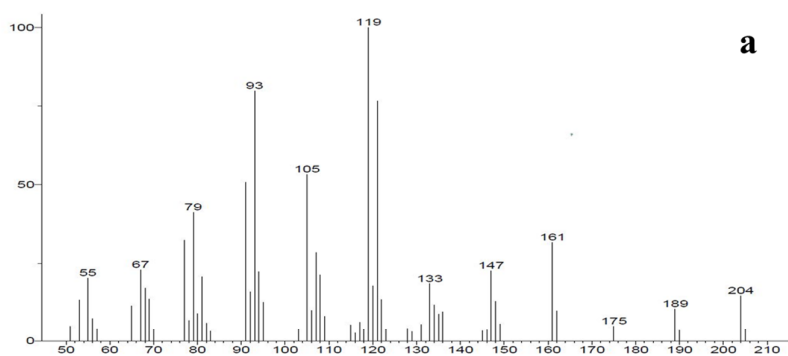


Figure S6 Mass spectra of peak 6 (a) from *Monomorium chinense* workers and α -neocallitropsene (b) from the literature-book, showing the match of mass spectra.

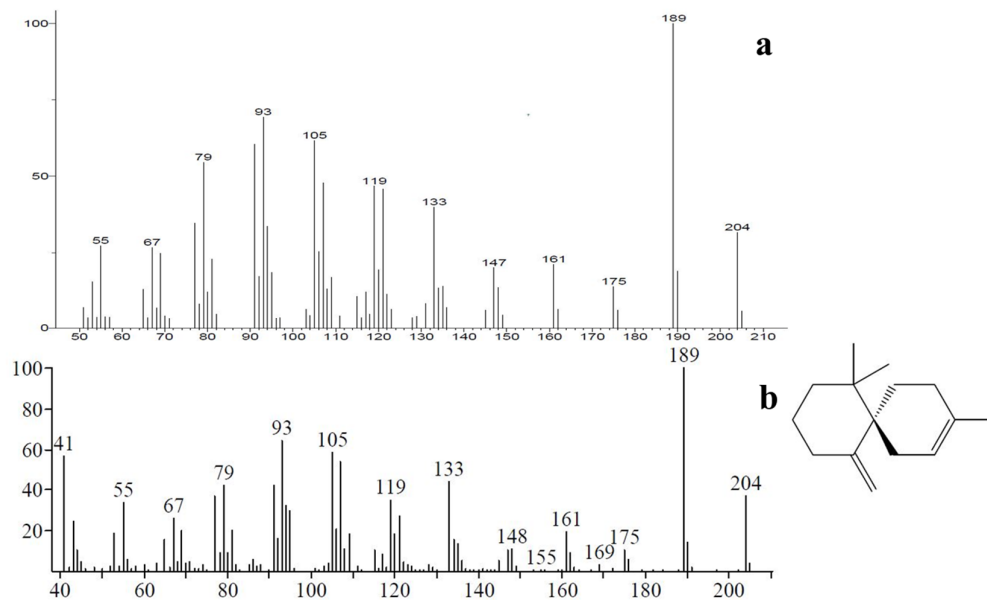


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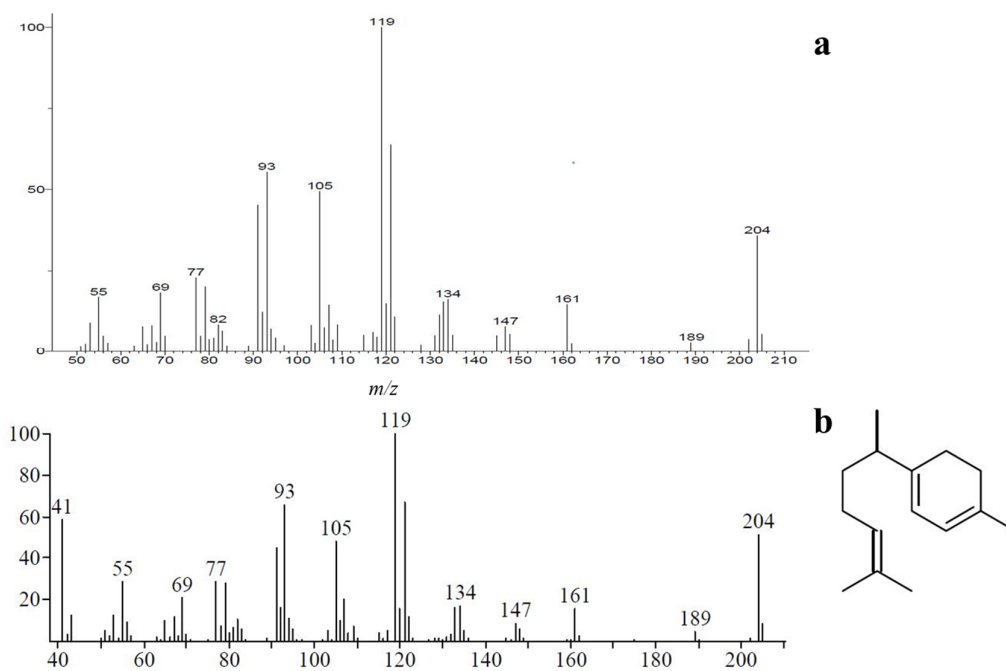


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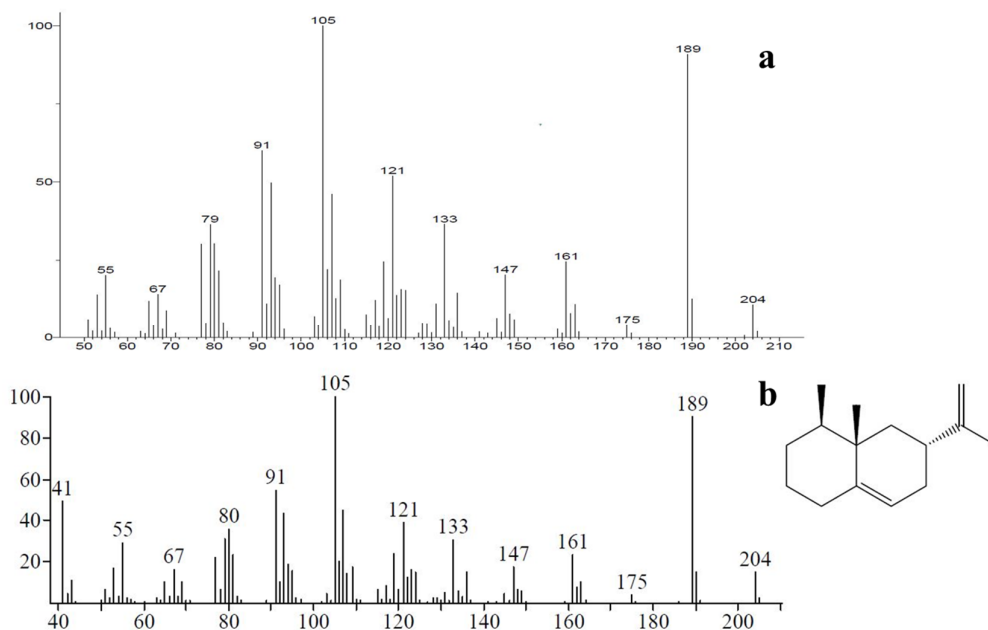


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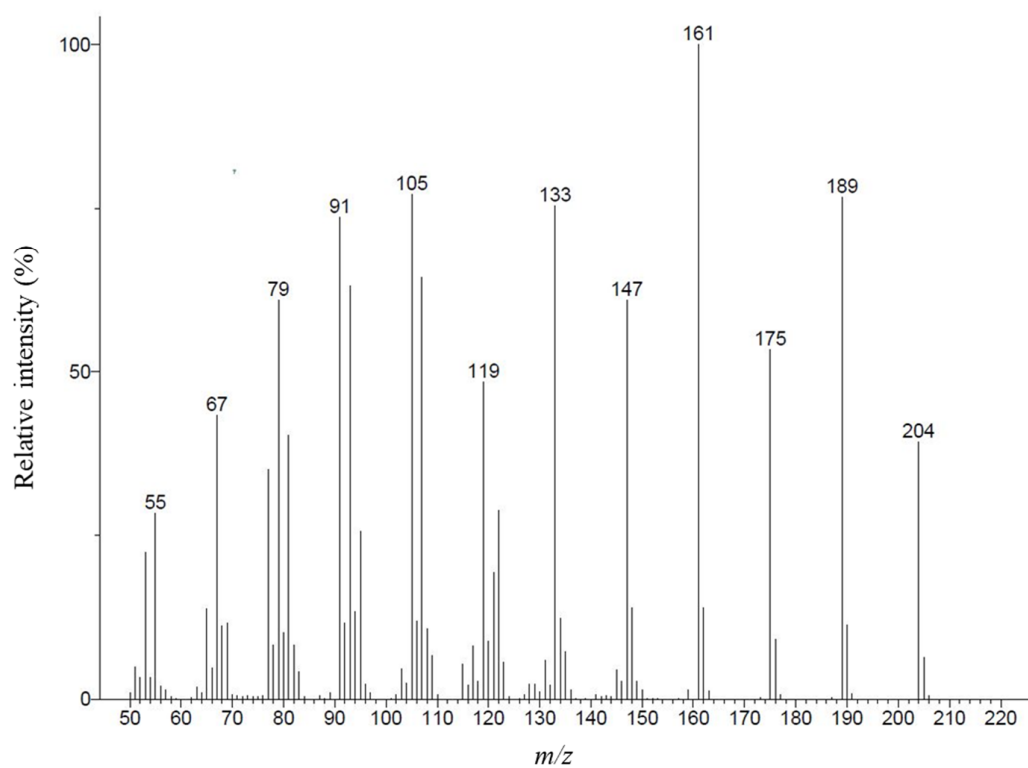


Figure S10 Mass spectrum of p10 from *Monomorium chinense* workers

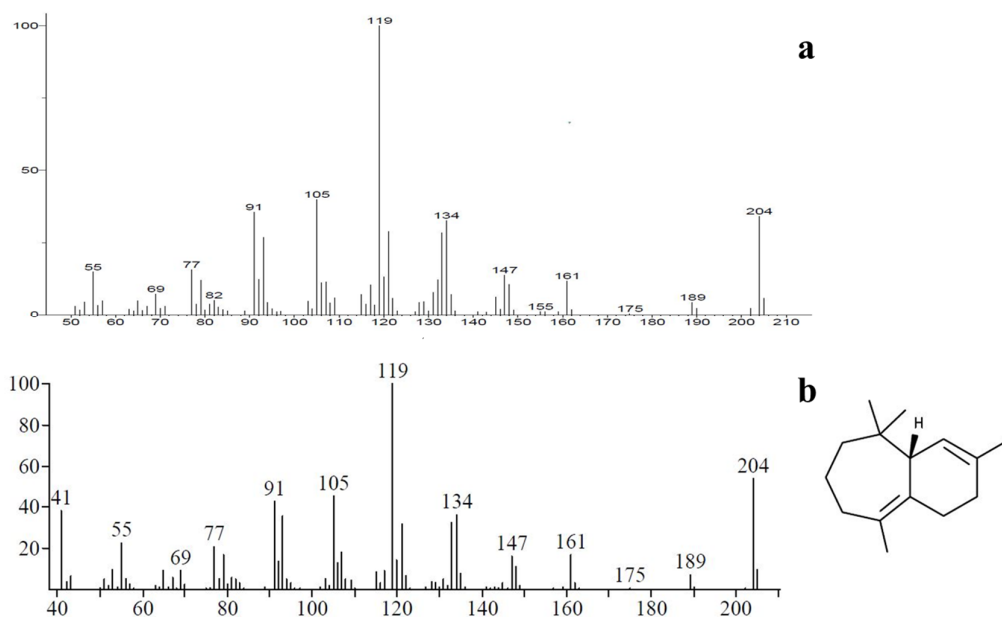


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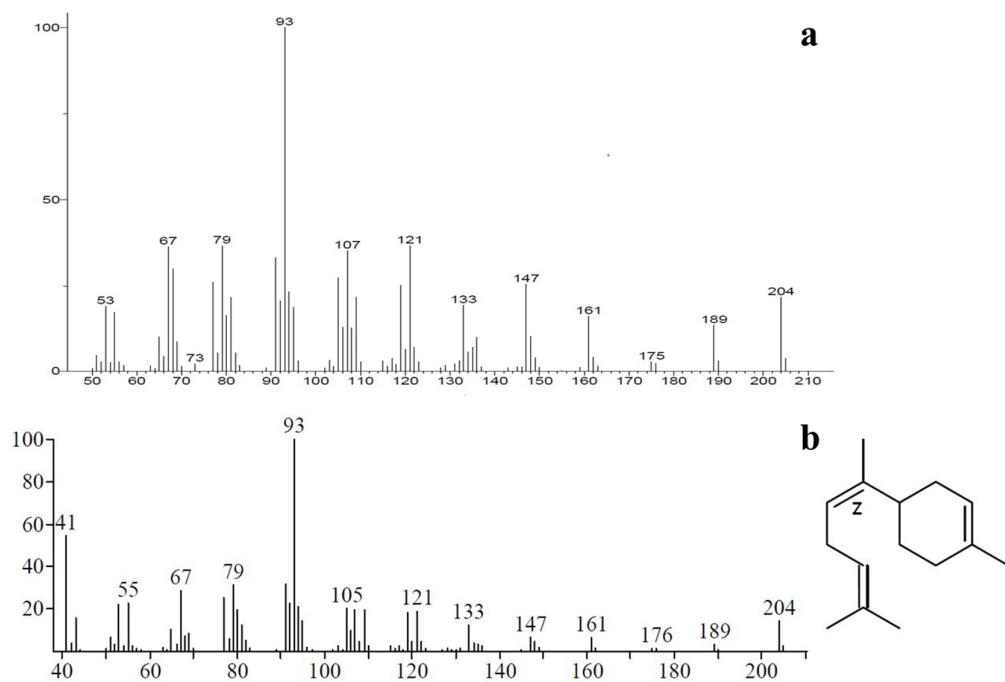


Figure S12 Mass spectra of peak 12 (a) from *Monomorium chinense* workers and (Z)- α -bisabolene (b) from the literature-book, showing the match of mass spectra.

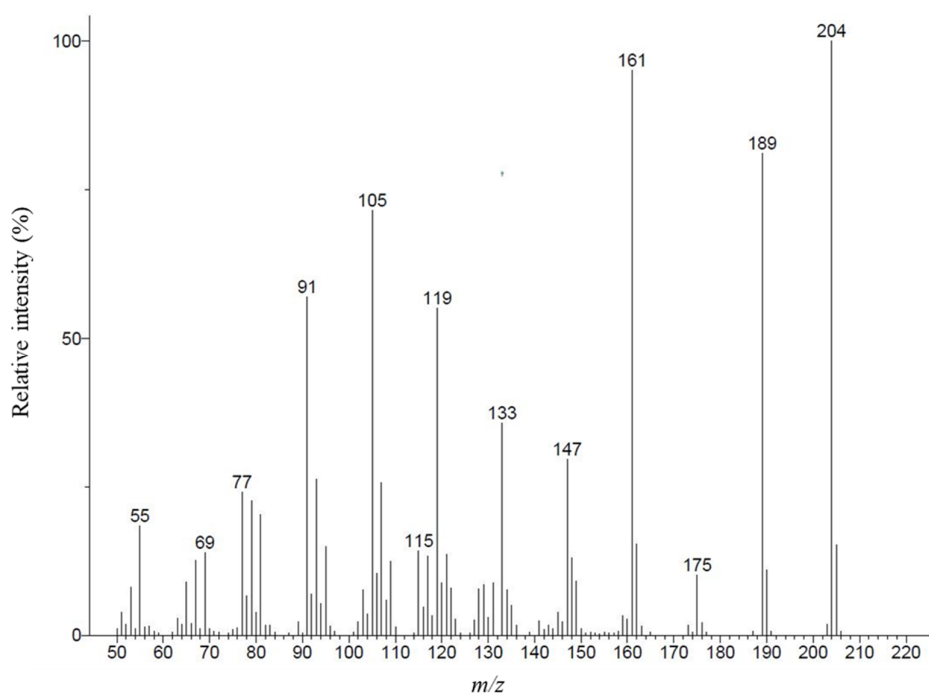


Figure S13 Mass spectrum of p13 from *Monomorium chinense* workers

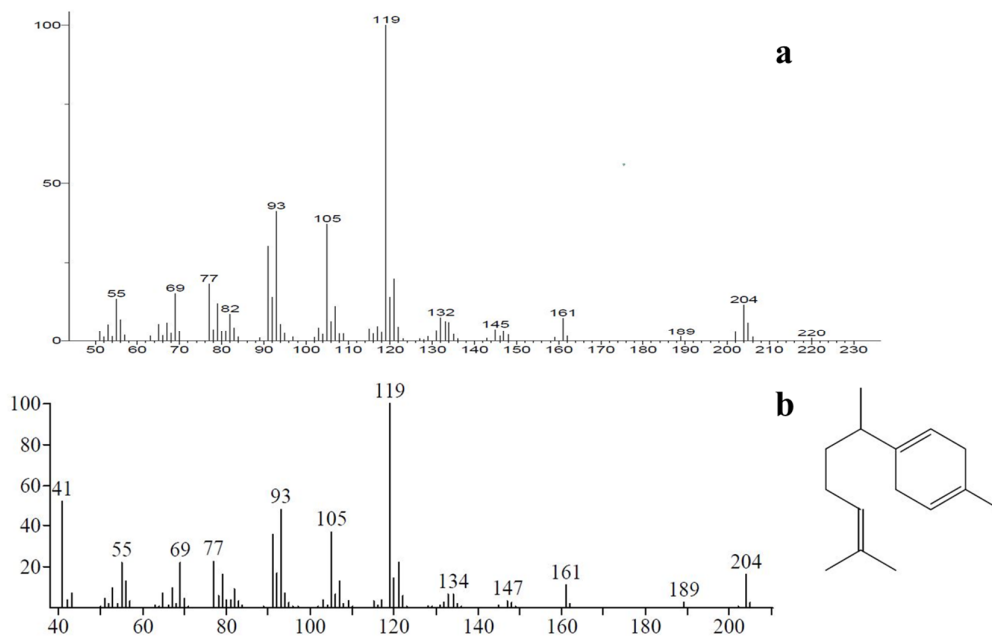


Figure S14 Mass spectra of peak 14 (a) from *Monomorium chinense* workers and β -curcumenol (b) from the literature-book, showing the match of mass spectra.

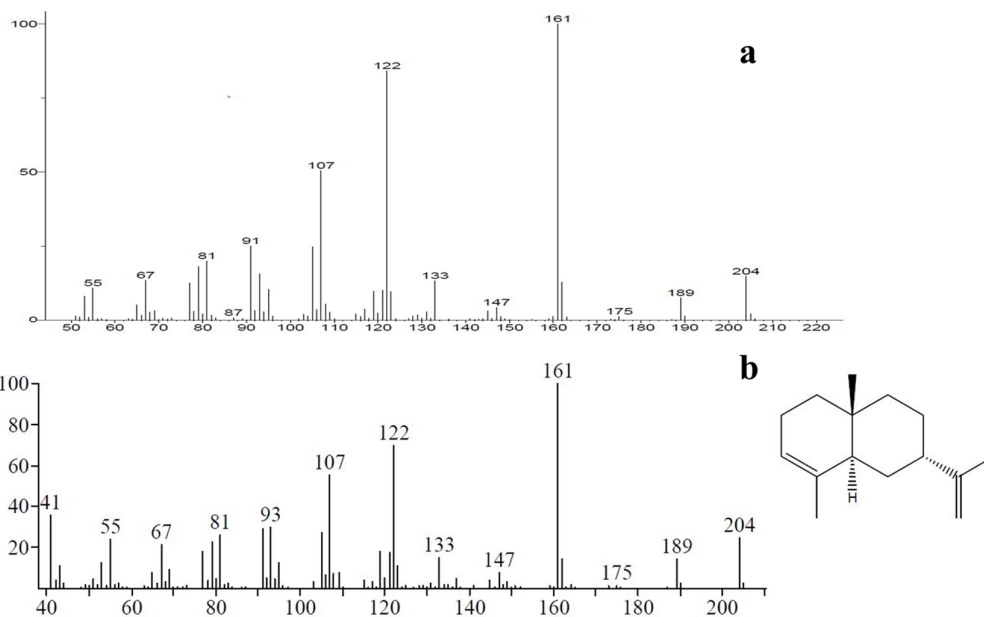


Figure S15 Mass spectra of peak 15 (a) from *Monomorium chinense* workers and 7-epi-α-selinene (b) from the literature ~~book~~, showing the match of mass spectra.

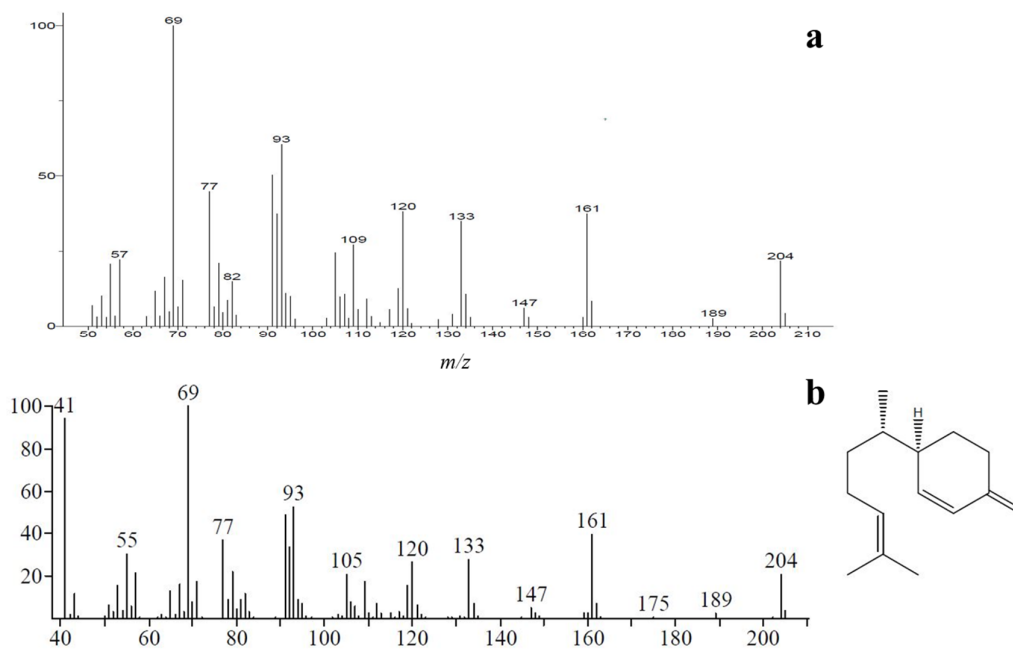


Figure S16 Mass spectra of peak 16 (a) from *Monomorium chinense* workers and β-sesquiphellandrene (b) from the literature ~~book~~, showing the match of mass spectra.

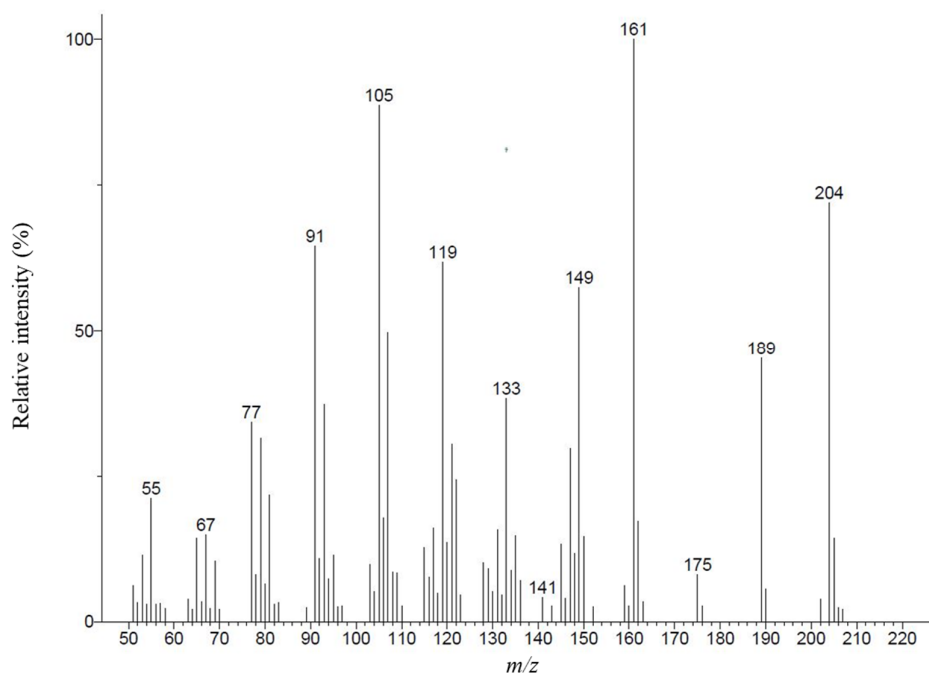
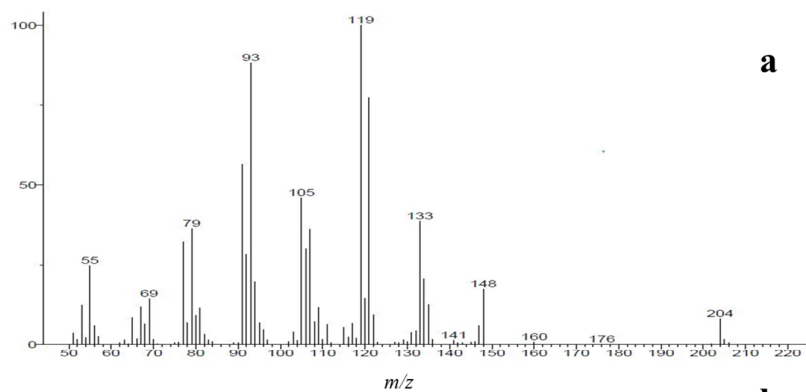
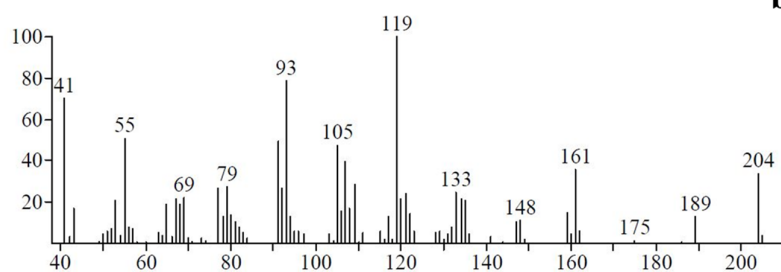


Figure S17 Mass spectrum of p17 from *Monomorium chinense* workers



a



b

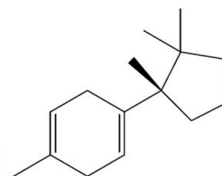


Figure S18 Mass spectra of peak 18 (a) from *Monomorium chinense* workers whole body extraction and γ -cuprenene (b) from the literature book, showing the match of mass spectra.

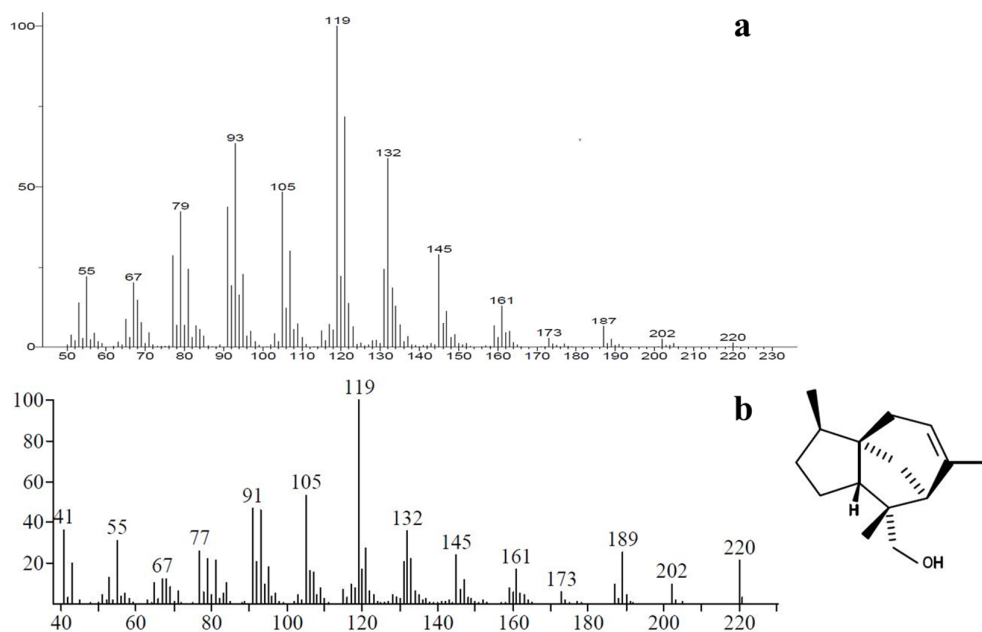


Figure S19 Mass spectra of peak 19 (**a**) from *Monomorium chinense* workers and 8-cedren-13-ol (**b**) from the literature ~~book~~, showing the match of mass spectra.

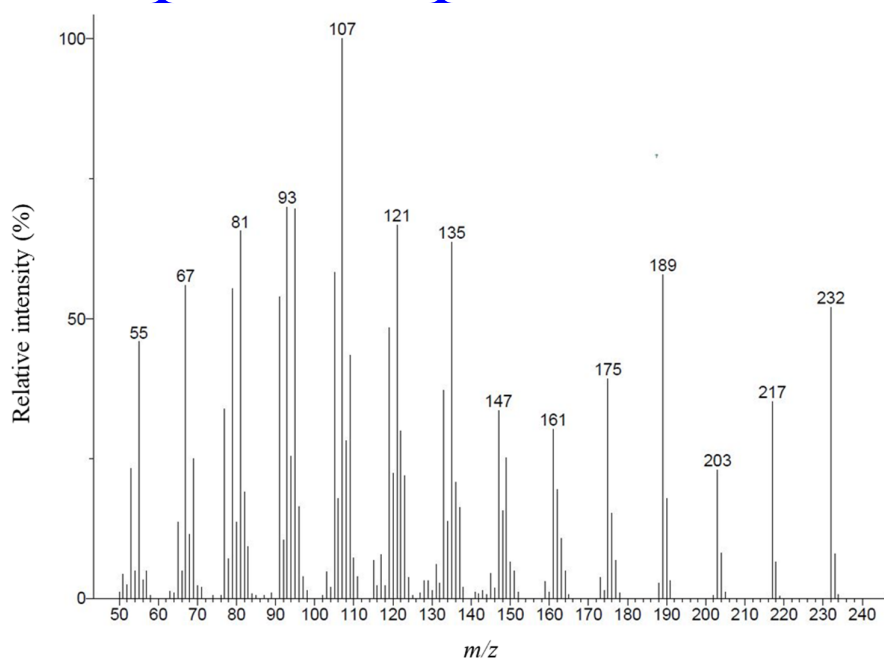


Figure S20 Mass spectrum of p20 from *Monomorium chinense* workers

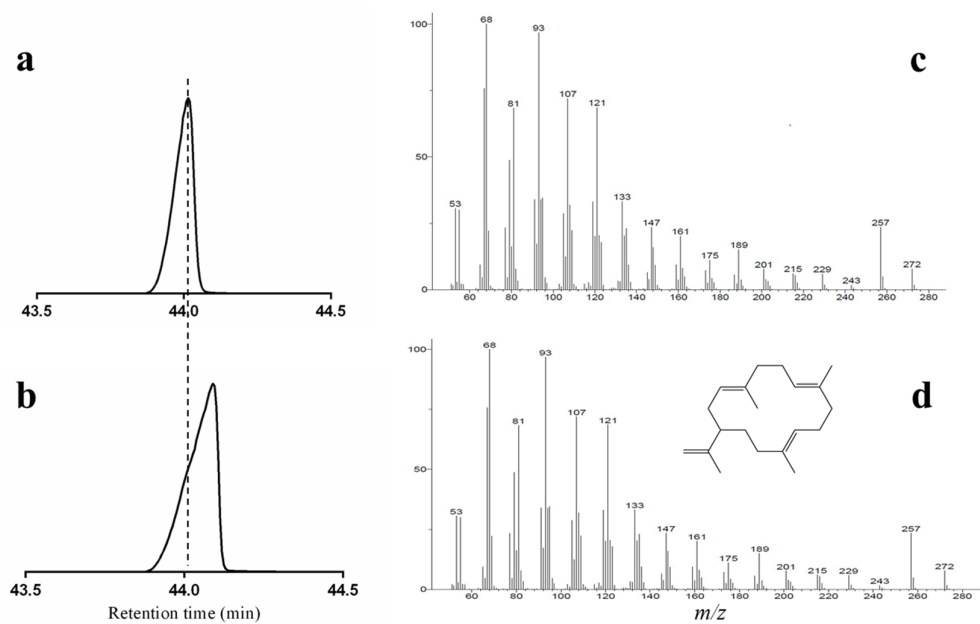


Figure S21 Total ion chromatograms of extract of *Monomorium chinense* workers (a) and *Monomorium pharaonis* workers (b), showing the match of retention times; Mass spectra of peak 2(c) and neocembrene (d), showing the match of mass spectra.

Table S1 Terpenes and terpenoids in insects

Order	Family	Common name	Number	Reference
Blattodea	Blattidae	Cockroach	2	[1,2]
Coleoptera	Carabidae	Ground beetle	15	[3]
	Chrysomelidae	Leaf beetle	10	[4-6]
	Scolytidae	Bark beetle	15	[7-12]
	Meloidae	Blister beetle	1	[13]
	Oedemeridae	False blister beetle	1	[13]
	Staphylinidae	Rove beetle	18	[14-17]
	Silphidae	Carion beetle	4	[18,19]
	Tenebrionidae	Darkling beetle	4	[20]
Diptera	Psychodidae	Moth fly, Sand fly	3	[16,21]
	Tephritidae	Fruit fly	12	[22-24]
Heteroptera	Pentatomidae	Stink bug	5	[25,26]
	Pyrhocoridae	Red bug	4	[27,28]
	Rhopalidae	Scentless plant bug	10	[29]
	Lygaeidae	Seed bug	3	[30]
Homoptera	Aphididae	Aphid	20	[31-33]
Hymenoptera	Tenthredinidae	Sawfly	4	[34]
	Formicidae	Ant	50	[35-53]
	Andrenidae	Mining bee	16	[54-56]
	Apidae	Honey bee	31	[57-63]
Isoptera	Rhinotermitidae	Termite	53	[53,64-70]
	Termitidae	Termite	30	[71-80]
	Nasutitermitidae	Termite	47	[81-92]
Lepidoptera	Papilionidae	Swallowtail butterfly	60	[93-100]
	Pieridae	Butterfly	11	[101-104]
	Pyalidae	Pyralid moth	2	[105]
	Nymphalidae	Brush-footed butterfly	3	[106,107]
Phasmatodea	Pseudophasmatidae	Stick insect	3	[108,109]
	Phasmatidae	Striped walkingstick	3	[110]
	Diapheromeridae	Stick insect	1	[111]
Total			220	

Table S2 Terpenes and terpenoids in ants and their glandular source

Category	Terpene	Subfamily	Gland	Reference
Monoterpene	Citral	Formicinae	Mandibular gland	[112]
	Citronellal	Formicinae	Rectum	[113]
	Citronellol	Formicinae, Myrmicinae	Rectum, Mandibular gland	[37,113]
	Geranial	Formicinae, Myrmicinae	Mandibular gland	[38,114]
	Geraniol	Myrmicinae	Mandibular gland	[38]
	4-Methylgeraniol	Ponerinae	Dufour's gland	[39]
	Bishomogeraniol	Ponerinae	Dufour's gland	[39]
	α -Pinene	Formicinae, Myrmicinae, Dolichoderinae	Rectum, Dufour's gland	[40,113]
	β -Pinene	Formicinae, Myrmicinae	Rectum, Dufour's gland	[40,113]
	Myrcene	Formicinae, Myrmicinae, Dolichoderinae	Rectum	[113]
	Cymene	Formicinae, Myrmicinae, Dolichoderinae	Rectum	[113]
	Limonene	Formicinae, Myrmicinae, Dorylinae, Dolichoderinae	Rectum, Mandibular gland, Poison gland	[41,113,115]
	Camphor	Formicinae	Rectum	[113]
	Camphene	Myrmicinae	Rectum, Dufour's gland	[40,113]
	β -Terpinene	Myrmicinae	Dufour's gland	[40]
	γ -Terpinene	Myrmicinae	Dufour's gland	[40]
	α -Terpinolene	Myrmicinae	Dufour's gland	[40]
	Neral	Myrmicinae	Mandibular gland	[42]

	Lasiol,	Formicinae	Mandibular gland	[44]
	β -Ocimene	Ecitoninae	Dufour's gland	[116]
	Iridodial	Dolichoderinae	Pygidial gland	[43]
	α -Farnesene	Formicinae, Myrmicinae, Nothomyrmecinae	Mandibular gland, Dufour's gland	[35,45-48,114]
	β -Farnesene	Myrmicinae	Dufour's gland	[35,47]
	α -Homofarnesene	Myrmicinae	Dufour's gland	[47,49]
Sesquiterpene	Bishomofarnesene	Myrmicinae	Dufour's gland	[47,49]
	Homofarnesene	Myrmicinae, Formicinae	Dufour's gland	[45,50]
	Trishomofarnesene	Myrmicinae	Dufour's gland	[35]
	β -Elemene	Myrmicinae	Venom gland	[36]
	β -Springene	Myrmicinae	Dufour's gland	[51]
	Geranyl geranial	Formicinae, Dorylinae	Mandibular gland, Dufour's gland	[41,117]
	Geranylgeraniol	Formicinae	Dufour's gland	[118]
Diterpene	Geranyl citronellal	Formicinae	Dufour's gland	[117]
	Geranyl linalool	Formicinae	Dufour's gland	[52]
	Geranylfarnesol	Formicinae	Dufour's gland	[52]
	Neocembrene	Myrmicinae	Dufour's gland	[51,119]

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