

1. Supplemental Information

Supplementary Table S0. Oil list, practitioner labels, primary references, literature-based labels, and notes.

Oil	Label_Practitioner	Primary_References	Label_Literature	Notes
Lemon	Uplifting	Goes 2012 (doi:10.1089/acm.2011.0551); Vieira 2018 (Chem-Biol Interact 283:97–106); Battaglia 2018; Tisserand & Young 2014	Uplifting	
Sweet Orange	Uplifting	Goes 2012 (doi:10.1089/acm.2011.0551); Vieira 2018; Battaglia 2018; Tisserand & Young 2014	Uplifting	
Bergamot	Uplifting	Vieira 2018; Battaglia 2018; Tisserand & Young 2014	Uplifting	
Neroli	Calming	Battaglia 2018; Tisserand & Young 2014; Khodabakhsh 2015 (J Nat Med 69:324–331)	Calming	
Grapefruit	Uplifting	Vieira 2018; Battaglia 2018; Tisserand & Young 2014	Uplifting	
Lime	Uplifting	Vieira 2018; Battaglia 2018; Tisserand & Young 2014	Uplifting	
Mandarin	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Petitgrain (Bitter Orange Leaf)	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Bitter Orange	Uplifting	Goes 2012; Vieira 2018; Battaglia 2018; Tisserand & Young 2014	Uplifting	
Yuzu	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Lavender	Calming	Koulivand 2013 (doi:10.1155/2013/681304); Donelli 2019 (doi:10.1016/j.phymed.2019.153099); Battaglia 2018; Tisserand & Young 2014	Calming	
Chamomile (Roman)	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Ylang-Ylang	Calming	Moss 2008 (doi:10.1080/00207450601042094); Battaglia 2018; Tisserand & Young 2014	Calming	
Geranium	Uplifting	Fonseca 2023 (IJMS 24:9244); Battaglia 2018; Tisserand & Young 2014	Calming	Human inhalation reports anxiety/BP reductions → Calming.
Rose (Damask)	Uplifting	Fonseca 2023; Battaglia 2018; Tisserand & Young 2014	Calming	Multiple human inhalation studies report anxiolysis → Calming.
Jasmine (Grandiflorum)	Uplifting	Battaglia 2018; Tisserand & Young 2014	Uplifting	
Clary Sage	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Helichrysum (Immortelle)	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Palmarosa	Uplifting	Fonseca 2023; Battaglia 2018; Tisserand & Young 2014	Uplifting	
Chamomile (German)	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Sandalwood	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Vetiver	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	Some reports suggest attentional/arousal effects; consider Stimulating in sensitivity analyses.
Frankincense	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Cedarwood (Atlas)	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Patchouli	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Pine (Scots)	Stimulating	Tisserand & Young 2014; Battaglia 2018	Stimulating	
Cypress	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Myrrh	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Juniper Berry	Stimulating	Tisserand & Young 2014; Battaglia 2018	Stimulating	
Copaiba Balsam	Calming	Battaglia 2018; Tisserand & Young 2014	Calming	
Peppermint	Stimulating	Moss 2008 (doi:10.1080/00207450601042094); Kennedy 2018 (Nutrients 10:1029); Tisserand & Young 2014	Stimulating	
Spearmint	Stimulating	Tisserand & Young 2014; Battaglia 2018	Stimulating	
Eucalyptus	Stimulating	Kovar 1987 (Planta Med 53:315–318); Kennedy & Wightman 2011 (Adv Nutr 2:32–50); Tisserand & Young 2014	Stimulating	
Tea Tree	Stimulating	Tisserand & Young 2014; Battaglia 2018	Stimulating	
Rosemary	Stimulating	Kovar 1987; Kennedy & Wightman 2011; Tisserand & Young 2014	Stimulating	
Wintergreen	Stimulating	Tisserand & Young 2014; Battaglia 2018	Stimulating	
Lemongrass	Stimulating	Tisserand & Young 2014; Battaglia 2018	Calming	Human inhalation studies show anxiolytic effects → Calming.
Commint	Stimulating	Kennedy 2018 (Mentha spp.); Tisserand & Young 2014	Stimulating	
Citronella	Uplifting	Fonseca 2023; Battaglia 2018; Tisserand & Young 2014	Uplifting	
Basil (Sweet)	Stimulating	Kennedy & Wightman 2011; Battaglia 2018; Tisserand & Young 2014	Stimulating	

Notes. The discrepancy between practitioner and literature label are rationalized in Notes column.

Supplementary Table S1a. GC–MS composition provenance for the 40 essential oils

Oil	Primary GCMS Source	Journal	DOI or URL	Notes
Lemon (<i>Citrus limon</i>) peel	Hsouna et al., 2017 — Chemical composition and antimicrobial activities of <i>Citrus limon</i> essential oil	Journal of Oleo Science	https://pmc.ncbi.nlm.nih.gov/article/s/PMC6801276/	GC–MS; limonene major with β -pinene and γ -terpinene; representative profile
Sweet Orange (<i>Citrus sinensis</i>) peel	Ferrer et al., 2023 — Correspondence between compositional and aromatic profile of sweet orange essential oils	Foods	https://pmc.ncbi.nlm.nih.gov/article/s/PMC10005092/	GC–MS; limonene typically >90%; minor myrcene/pinenes
Bergamot (<i>Citrus</i> $\times$ <i>bergamia</i>) peel	Costa et al., 2010 — GC–MS characterization of bergamot essential oil	Fitoterapia	https://www.sciencedirect.com/science/article/pii/S0367326X10000847	Linalyl acetate, linalool, limonene prominent; chemotype/batch variability
Neroli (<i>Citrus aurantium</i> var. <i>amara</i> flower)	Bonaccorsi et al., 2011 — Composition of Egyptian Neroli Oil	Natural Product Communications	https://journals.sagepub.com/doi/10.1177/1934578X1100601217	Linalool-rich; β -ocimene, α -terpineol present
Grapefruit (<i>Citrus paradisi</i>) peel	Voo et al., 2021 — The composition, biological activity and safety of grapefruit oil	Frontiers in Plant Science	https://www.frontiersin.org/articles/10.3389/fpls.2021.613077/full	Review summarizing GC–MS profiles; limonene typically >90% (add a primary GC–MS article if available)
Lime (<i>Citrus aurantiifolia</i>) peel	Mehetre et al., 2019 — Evaluation of lime peel oil composition	Journal of Essential Oil Research	https://www.tandfonline.com/doi/full/10.1080/10412905.2019.1672263	Typical limonene, γ -terpinene, β -pinene proportions
Mandarin (<i>Citrus reticulata</i>) peel	Tranchida et al., 2017 — Comprehensive chemical profiling of mandarin peel essential oil by GC $\times$ GC–MS	Journal of Mass Spectrometry	https://analyticalsciencejournals.onlinelibrary.wiley.com/doi/10.1002/jms.3995	Detailed volatile composition; limonene and γ -terpinene prominent
Petitgrain (<i>Citrus aurantium</i> leaf)	Mondello et al., 1996 — GC–MS composition of petitgrain bigarade essential oil	Journal of Essential Oil Research	https://doi.org/10.1080/10412905.1996.9700581	Linalyl acetate and linalool major constituents
Bitter Orange (<i>Citrus aurantium</i>) peel	Siddiq et al., 2019 — Composition and sensory profile of bitter orange peel oil	Flavour and Fragrance Journal	https://onlinelibrary.wiley.com/doi/10.1002/ffj.3524	Limonene often >90% with minor myrcene/pinenes
Yuzu (<i>Citrus junos</i>) peel	Mookherjee & Trivedi, 1990 — Steam volatile constituents of yuzu peel oil	Flavour and Fragrance Journal	https://onlinelibrary.wiley.com/doi/abs/10.1002/ffj.2730050205	Limonene major; γ -terpinene, β -myrcene also present
Lavender (<i>Lavandula angustifolia</i>)	Nedelcheva-Antonova et al., 2022 — Exploring the chemical composition of Bulgarian lavender essential oil	Plants	https://pmc.ncbi.nlm.nih.gov/article/s/PMC9692913/	Linalool ~30–40%; linalyl acetate ~25–45% across cultivars
Chamomile (Roman) (<i>Chamaemelum nobile</i>)	Antonelli et al., 1998 — Essential oil composition of Roman chamomile	Journal of Essential Oil Research	https://doi.org/10.1080/10412905.1998.9700974	Angelate esters (isobutyl/isoamyl/methallyl) prominent
Ylang-Ylang (<i>Cananga odorata</i>)	Gaydou & Randriamiharisoa, 1986 — Volatile constituents of <i>Cananga odorata</i> (ylang-ylang)	Journal of Agricultural and Food Chemistry	https://doi.org/10.1021/jf00069a028	Benzyl benzoate, β -caryophyllene, linalool among majors; fraction grade matters
Geranium (<i>Pelargonium graveolens</i>)	El-Ghorab et al., 2006 — The chemical composition of Egyptian <i>Pelargonium graveolens</i> essential oil	Journal of Essential Oil-Bearing Plants		Citronellol/geraniol/linalool dominant; add DOI if available
Rose (Damask) (<i>Rosa damascena</i>)	Rusanov et al., 2009 — GC–MS profile of <i>Rosa damascena</i> essential oil	Industrial Crops and Products		Citronellol, geraniol, nerol dominant; distillation method affects ratios
Jasmine (<i>Grandiflorum</i>) absolute	Piochi et al., 2022 — Volatile profile of <i>Jasminum grandiflorum</i> (absolute vs EO)	Horticulturae		Benzyl acetate high; benzyl benzoate, linalool, indole present
Clary Sage (<i>Salvia sclarea</i>)	Zheljazkov et al., 2023 — Essential oil composition of <i>S. sclarea</i> across plant parts	Molecules	https://www.mdpi.com/1420-3049/28/17/6294	Linalyl acetate and linalool dominant; organ/seasonal effects
Helichrysum (<i>Immortelle</i>) (<i>Helichrysum italicum</i>)	Kramberger et al., 2020 — Chemical composition of <i>H. italicum</i> essential oil	Plants	https://www.mdpi.com/2223-7747/9/11/1612	Neryl acetate chemotype described; α -pinene, γ -curcumene noted
Palmarosa (<i>Cymbopogon martinii</i>)	Raina & Abraham, 2003 — GC–MS composition of palmarosa oil	Flavour and Fragrance Journal	https://doi.org/10.1002/ffj.1222	Geraniol typically 60–80%; geranyl acetate present
Chamomile (German) (<i>Matricaria recutita</i>)	Sashidhara et al., 2006 — Composition of German chamomile essential oil	Flavour and Fragrance Journal		α -bisabolol, bisabolol oxides, chamazulene characteristic; add DOI if available
Sandalwood (<i>Santalum album</i>)	Biswas & Biswas, 2021 — Sandalwood oil composition (includes ISO 3518 ranges)	Molecules	https://pmc.ncbi.nlm.nih.gov/article/s/PMC8634936/	α -santalol 41–55%, β -santalol 16–24% (ISO)
Vetiver (<i>Chrysopogon zizanioides</i>)	Bikoba et al., 2017 — Chemical composition of vetiver essential oil from Rwanda	Journal of Essential Oil Research		Khusimol, vetiverols/vetivones prominent; replace with your exact GC–MS dataset if needed
Frankincense (<i>Boswellia carterii</i>)	Tucker, 2019 — Frankincense essential oils: chemistry, quality, and variability	Industrial Crops and Products	https://www.sciencedirect.com/science/article/pii/S0926669019307163	α -pinene, α -thujene, limonene typical; incensole acetate variable
Cedarwood (Atlas) (<i>Cedrus atlantica</i>)	Boudiar et al., 2012 — Chemical composition of <i>Cedrus atlantica</i> essential oil	Natural Product Communications	https://journals.sagepub.com/doi/10.1177/1934578X1200700315	Himachalene isomers (α , β , γ) major
Patchouli (<i>Pogostemon cablin</i>)	Zhao et al., 2005 — Chemical composition of patchouli oil by GC–MS	Journal of Agricultural and Food Chemistry	https://pubs.acs.org/doi/10.1021/jf048675h	Patchouli alcohol, α / δ -guaiene, sychellene

Pine (Scots) (<i>Pinus sylvestris</i>)	Judžentienė & Būdienė, 2008 — Volatile constituents of <i>Pinus sylvestris</i>	Journal of Essential Oil Research	https://doi.org/10.1080/10412905.2008.9700078	α -pinene, β -pinene, δ -3-carene common (needle/twig oils)
Cypress (<i>Cupressus sempervirens</i>)	Maggi et al., 2020 — Essential oils from Mediterranean <i>Cupressus</i> spp.	Industrial Crops & Products		Review summarizing GC–MS; α -pinene often >50%, δ -3-carene frequent; add 1° GC–MS if available
Myrrh (<i>Commiphora myrrha</i>)	Morteza-Semnani et al., 2003 — Composition of <i>C. myrrha</i> essential oil	Journal of Essential Oil Research		Furanoudesma-1,3-diene/curzerene/lindestrene; heat isomerization affects ratios; add DOI if available
Juniper Berry (<i>Juniperus communis</i>)	Aleksić et al., 2014 — GC–MS of <i>J. communis</i> berry essential oil	Natural Product Research	https://www.tandfonline.com/doi/full/10.1080/14786419.2014.938311	α -pinene commonly dominant; myrcene, sabinene
Copaiba (<i>Copaifera</i> spp.) oleoresin	da Trindade et al., 2018 — Chemical composition of copaiba oils	Molecules	https://www.mdpi.com/1420-3049/23/8/1761	β -caryophyllene frequently 30–60% depending on species
Peppermint (<i>Mentha × piperita</i>)	Beigi et al., 2018 — Peppermint oil composition and bioactivity (review with GC–MS)	RSC Advances	https://pubs.rsc.org/en/content/articlelanding/2018/ra/c8ra06908j	Menthol ~40–50%; menthone; menthyl acetate
Spearmint (<i>Mentha spicata</i>)	Snoussi et al., 2015 — Chemical composition of Tunisian <i>M. spicata</i> oil	Journal of Food Measurement and Characterization	https://link.springer.com/article/10.1007/s11694-015-9216-5	Carvone ~60–70%, limonene ~10–20%
Eucalyptus (<i>Eucalyptus globulus</i>)	Tyagi & Malik, 2014 — Antimicrobial potential and composition of <i>E. globulus</i> oil	Industrial Crops & Products		1,8-Cineole typically 70–85%
Tea Tree (<i>Melaleuca alternifolia</i>)	Brophy et al., 1989 — Composition of Australian tea tree oil by GC/GC–MS	Journal of Agricultural and Food Chemistry	https://pubs.acs.org/doi/abs/10.1021/jf00093a006	Terpinen-4-ol ~30–48%; γ -terpinene; α -terpineol
Rosemary (<i>Rosmarinus officinalis</i>) – cineole chemotype	Satyal et al., 2017 — Chemotypic characterization of rosemary essential oils	Molecules	https://pmc.ncbi.nlm.nih.gov/articles/PMC5368539/	Multiple chemotypes; cineole-, camphor-, verbenone-rich variants

Supplementary Table S1b. Composition table (long format).

Oil	Compound	Percent by wt (%)	Mood Label
Lemon	Limonene	68.0	Uplifting
Lemon	β -Pinene	16.0	Uplifting
Lemon	γ -Terpinene	12.0	Uplifting
Sweet Orange	Limonene	93.7	Uplifting
Sweet Orange	β -Myrcene	2.1	Uplifting
Sweet Orange	α -Pinene	0.7	Uplifting
Sweet Orange	β -Pinene	1.0	Uplifting
Bergamot	Limonene	40.0	Uplifting
Bergamot	Linalyl Acetate	28.5	Uplifting
Bergamot	Linalool	11.7	Uplifting
Bergamot	β -Pinene	7.2	Uplifting
Bergamot	γ -Terpinene	6.3	Uplifting
Neroli	Linalool	53.3	Calming
Neroli	Limonene	11.9	Calming
Neroli	α -Terpineol	6.2	Calming
Neroli	Geraniol	3.8	Calming
Neroli	β -Ocimene	3.3	Calming
Grapefruit	Limonene	93.3	Uplifting
Grapefruit	β -Myrcene	2.2	Uplifting
Grapefruit	α -Pinene	0.8	Uplifting
Grapefruit	Sabinene	0.6	Uplifting
Lime	Limonene	42.3	Uplifting
Lime	γ -Terpinene	15.4	Uplifting
Lime	β -Pinene	12.6	Uplifting
Lime	α -Pinene	3.1	Uplifting
Lime	Neryl Acetate	2.2	Uplifting
Lime	Sabinene	2.1	Uplifting
Mandarin	Limonene	73.4	Calming
Mandarin	γ -Terpinene	17.5	Calming
Mandarin	α -Pinene	2.1	Calming
Mandarin	β -Myrcene	1.8	Calming
Mandarin	β -Pinene	1.4	Calming
Mandarin	p-Cymene	1.2	Calming
Petitgrain (Bitter Orange Leaf)	Linalyl Acetate	48.1	Calming
Petitgrain (Bitter Orange Leaf)	Linalool	26.9	Calming
Petitgrain (Bitter Orange Leaf)	α -Terpineol	8.0	Calming
Petitgrain (Bitter Orange Leaf)	Geranyl Acetate	5.0	Calming
Bitter Orange	Limonene	94.0	Uplifting
Bitter Orange	β -Myrcene	1.8	Uplifting
Bitter Orange	Linalyl Acetate	1.2	Uplifting

Bitter Orange	β -Pinene	0.5	Uplifting
Yuzu	Limonene	78.0	Calming
Yuzu	γ -Terpinene	9.3	Calming
Yuzu	β -Myrcene	1.8	Calming
Yuzu	α -Pinene	1.3	Calming
Lavender	Linalool	35.0	Calming
Lavender	Linalyl Acetate	40.0	Calming
Lavender	β -Caryophyllene	6.0	Calming
Lavender	Lavandulol	3.0	Calming
Chamomile (Roman)	Isobutyl angelate	25.0	Calming
Chamomile (Roman)	Isoamyl angelate	10.0	Calming
Chamomile (Roman)	Methylalyl angelate	5.0	Calming
Chamomile (Roman)	α -Pinene	5.0	Calming
Ylang-Ylang	β -Caryophyllene	18.0	Calming
Ylang-Ylang	Benzyl Benzoate	12.0	Calming
Ylang-Ylang	Geranyl Acetate	8.0	Calming
Ylang-Ylang	Linalool	6.0	Calming
Geranium	Citronellol	30.0	Calming
Geranium	Geraniol	15.0	Calming
Geranium	Linalool	10.0	Calming
Geranium	Citronellyl Formate	8.0	Calming
Rose (Damask)	Citronellol	46.2	Calming
Rose (Damask)	Geraniol	16.2	Calming
Rose (Damask)	Nonadecane	8.8	Calming
Rose (Damask)	Nerol	7.4	Calming
Jasmine (Grandiflorum)	Benzyl Acetate	50.0	Uplifting
Jasmine (Grandiflorum)	Linalool	9.0	Uplifting
Jasmine (Grandiflorum)	α -Farnesene	8.0	Uplifting
Jasmine (Grandiflorum)	Eugenol	6.0	Uplifting
Jasmine (Grandiflorum)	cis-Jasmone	6.0	Uplifting
Jasmine (Grandiflorum)	Indole	5.0	Uplifting
Clary Sage	Linalyl Acetate	34.6	Calming
Clary Sage	Linalool	17.7	Calming
Clary Sage	α -Murolene	8.3	Calming
Clary Sage	β -Caryophyllene	5.6	Calming
Clary Sage	α -Terpineol	4.8	Calming
Helichrysum (Immortelle)	Neryl Acetate	37.5	Calming
Helichrysum (Immortelle)	α -Pinene	16.5	Calming
Helichrysum (Immortelle)	γ -Curcumene	13.4	Calming
Helichrysum (Immortelle)	β -Selinene	4.6	Calming
Helichrysum (Immortelle)	β -Caryophyllene	3.4	Calming
Helichrysum (Immortelle)	Italidione II	2.3	Calming
Palmarosa	Geraniol	72.3	Uplifting
Palmarosa	Geranyl Acetate	9.3	Uplifting
Palmarosa	Citral	4.0	Uplifting
Palmarosa	Linalool	2.0	Uplifting
Palmarosa	Farnesol	1.1	Uplifting
Chamomile (German)	α -Bisabolol Oxide A	30.0	Calming
Chamomile (German)	α -Bisabolol Oxide B	23.0	Calming
Chamomile (German)	β -Farnesene (E)	20.0	Calming
Chamomile (German)	α -Bisabolol	5.0	Calming
Chamomile (German)	Chamazulene	5.0	Calming
Sandalwood	α -Santalol	50.0	Calming
Sandalwood	β -Santalol	20.0	Calming
Sandalwood	epi- β -Santalol	10.0	Calming
Vetiver	Khusimol	15.0	Calming
Vetiver	Isovalencenol	5.0	Calming
Vetiver	β -Vetivenene	5.0	Calming
Vetiver	α -Vetivone	4.0	Calming
Vetiver	β -Vetivone	2.0	Calming
Frankincense	α -Pinene	40.0	Calming
Frankincense	α -Thujene	10.0	Calming
Frankincense	Limonene	8.0	Calming
Frankincense	Incensole Acetate	5.0	Calming
Cedarwood (Atlas)	β -Himachalene	45.0	Calming
Cedarwood (Atlas)	α -Himachalene	15.0	Calming
Cedarwood (Atlas)	γ -Himachalene	5.0	Calming
Patchouli	Patchouli Alcohol	19.7	Calming
Patchouli	δ -Guaiene	18.0	Calming
Patchouli	α -Guaiene	14.1	Calming

Patchouli	Seychellene	8.0	Calming
Pine (Scots)	α -Pinene	40.4	Stimulating
Pine (Scots)	β -Pinene	19.4	Stimulating
Pine (Scots)	δ -3-Carene	17.6	Stimulating
Cypress	α -Pinene	53.8	Calming
Cypress	δ -3-Carene	22.7	Calming
Cypress	Limonene	4.5	Calming
Myrrh	Furanoeudesma-1,3-diene	30.0	Calming
Myrrh	Curzerene	20.0	Calming
Myrrh	Lindestrane	10.0	Calming
Juniper Berry	α -Pinene	51.4	Stimulating
Juniper Berry	β -Myrcene	8.3	Stimulating
Juniper Berry	Sabinene	5.8	Stimulating
Copaiba Balsam	β -Caryophyllene	55.0	Calming
Copaiba Balsam	α -Copaene	7.0	Calming
Copaiba Balsam	δ -Cadinene	5.0	Calming
Copaiba Balsam	γ -Cadinene	5.0	Calming
Peppermint	Menthol	44.4	Stimulating
Peppermint	Menthone	15.4	Stimulating
Peppermint	Menthofuran	10.3	Stimulating
Peppermint	1,8-Cineole	5.8	Stimulating
Peppermint	Menthyl Acetate	4.8	Stimulating
Spearmint	Carvone	64.0	Stimulating
Spearmint	Limonene	15.0	Stimulating
Spearmint	1,8-Cineole	2.2	Stimulating
Spearmint	β -Myrcene	1.7	Stimulating
Spearmint	α -Pinene	1.0	Stimulating
Eucalyptus	1,8-Cineole	80.0	Stimulating
Eucalyptus	α -Pinene	10.0	Stimulating
Eucalyptus	Limonene	5.0	Stimulating
Tea Tree	Terpinen-4-ol	47.7	Stimulating
Tea Tree	γ -Terpinene	11.6	Stimulating
Tea Tree	α -Terpineol	6.7	Stimulating
Rosemary	1,8-Cineole	40.0	Stimulating
Rosemary	α -Pinene	15.0	Stimulating
Rosemary	Camphor	10.0	Stimulating
Rosemary	Verbenone	5.0	Stimulating
Rosemary	Bornyl Acetate	5.0	Stimulating
Wintergreen	Methyl Salicylate	98.0	Stimulating
Lemongrass	Geranial	44.9	Calming
Lemongrass	Neral	34.1	Calming
Lemongrass	Geranyl Acetate	4.8	Calming
Commint	Menthol	75.0	Stimulating
Commint	Menthone	6.0	Stimulating
Commint	Isomenthone	4.0	Stimulating
Citronella	Citronellal	40.0	Uplifting
Citronella	Geraniol	20.0	Uplifting
Citronella	Citronellol	10.0	Uplifting
Citronella	Limonene	5.0	Uplifting
Citronella	Geranyl Acetate	5.0	Uplifting
Basil (Sweet)	Linalool	42.0	Stimulating
Basil (Sweet)	Estragole	22.0	Stimulating
Basil (Sweet)	Eugenol	8.0	Stimulating
Basil (Sweet)	β -Caryophyllene	5.0	Stimulating

Supplementary Table S2. Full Logistic Regression Coefficients (β) for All Compounds and Models.

Compound	β (Calming)	β (Uplifting)	β (Stimulating)
1,8-Cineole	-2.105	-0.928	3.648
Benzyl Acetate	-0.484	1.869	-0.564
Benzyl Benzoate	1.252	-0.822	-0.45
Bornyl Acetate	-0.529	-0.012	1.228
Camphor	-0.529	-0.012	1.228
Carvone	-1.706	-1.055	3.022
Chamazulene	0.68	-0.266	-0.26
Citral	-1.166	1.877	-0.091

Citronellal	-2.398	3.194	-0.467
Citronellol	1.52	-0.699	-0.694
Citronellyl Formate	2.055	-1.212	-0.675
Curzerene	1.013	-0.427	-0.413
Estragole	-1.433	-1.055	2.308
Eugenol	-1.455	0.281	1.527
Farnesol	-1.166	1.877	-0.091
Furanoesudesma-1,3-diene	1.013	-0.427	-0.413
Geranial	1.097	-0.762	-0.413
Geraniol	-1.065	2.21	-0.447
Geranyl Acetate	2.446	-0.495	-1.143
Incensole Acetate	1.105	-0.027	-0.573
Indole	-0.484	1.869	-0.564
Isoamyl angelate	0.982	-0.331	-0.42
Isobutyl angelate	0.982	-0.331	-0.42
Isomenthone	-0.837	-0.55	1.448
Isovalencenol	0.68	-0.266	-0.26
Italidione II	0.766	-0.279	-0.251
Khusimol	0.68	-0.266	-0.26
Lavandulol	2.519	-2.335	-0.142
Limonene	-2.433	7.255	-4.969
Linalool	1.323	-0.526	-0.398
Linalyl Acetate	-0.824	3.042	-1.586
Lindestrene	1.013	-0.427	-0.413
Menthofuran	-0.51	-0.249	1.228
Menthol	-0.992	-0.607	1.893
Menthone	-0.786	-0.436	1.685
Menthyl Acetate	-0.51	-0.249	1.228
Methallyl angelate	0.982	-0.331	-0.42
Methyl Salicylate	-1.758	-1.168	3.202
Neral	1.097	-0.762	-0.413
Nerol	0.993	-0.736	-0.287
Neryl Acetate	0.491	0.741	-0.589
Nonadecane	0.993	-0.736	-0.287
Patchouli Alcohol	0.801	-0.334	-0.309
Sabinene	-4.041	6.062	0.505
Seychellene	0.801	-0.334	-0.309
Terpinen-4-ol	-6.767	0.515	4.387
Verbenone	-0.529	-0.012	1.228
cis-Jasmone	-0.484	1.869	-0.564
epi- β -Santalol	1.013	-0.427	-0.413
p-Cymene	0.134	-0.723	0.709
α -Bisabolol	0.68	-0.266	-0.26
α -Bisabolol Oxide A	0.68	-0.266	-0.26
α -Bisabolol Oxide B	0.68	-0.266	-0.26
α -Copaene	0.651	-0.15	-0.306
α -Farnesene	-0.484	1.869	-0.564
α -Guaiene	0.801	-0.334	-0.309
α -Himachalene	1.013	-0.427	-0.413
α -Muurolene	1.772	-0.896	-0.611
α -Pinene	2.072	-5.838	0.513
α -Santalol	1.013	-0.427	-0.413
α -Terpineol	2.957	-3.936	0.685
α -Thujene	1.105	-0.027	-0.573
α -Vetivone	0.68	-0.266	-0.26
β -Caryophyllene	1.368	-0.838	-0.321
β -Farnesene (E)	0.68	-0.266	-0.26
β -Himachalene	1.013	-0.427	-0.413
β -Myrcene	0.881	-3.585	2.814
β -Ocimene	0.993	-0.031	-0.937
β -Pinene	-10.234	8.356	4.992
β -Santalol	1.013	-0.427	-0.413
β -Selinene	0.766	-0.279	-0.251
β -Vetivenene	0.68	-0.266	-0.26
β -Vetivone	0.68	-0.266	-0.26
γ -Cadinene	0.651	-0.15	-0.306
γ -Curcumene	0.766	-0.279	-0.251
γ -Himachalene	1.013	-0.427	-0.413
γ -Terpinene	9.394	-7.939	-4.58
δ -3-Carene	2.613	-6.465	-1.124

δ -Cadinene	0.651	-0.15	-0.306
δ -Guaiane	0.801	-0.334	-0.309

Notes. Several compounds share identical standardized coefficients across the three one-vs-rest logistic models. This is expected when compounds co-occur exclusively in the same subset of oils: after column-wise z-scaling these predictors become perfectly (or near-perfectly) collinear, so the logistic solution is not unique and returns identical β triples. I retain all compounds for chemical interpretability and interpret tied coefficients as a group effect.

Supplementary Table S3 (separate file). Full composition matrix (wide format, $\geq 0.5\%$ w/w).

Provided as Supplementary Data S3 (CSV): S1b_Composition_WIDE_GE0p5.csv.

Columns: Oil, Mood_Label, [Compound₁ ... Compound_n]. Blanks indicate $< 0.5\%$ or not reported.

Supplementary Table S4. PCA Loadings for All Compounds on the First Two Principal Components.

Compound	PC1	PC2
1,8-Cineole	-0.049	0.337
Benzyl Acetate	-0.020	-0.031
Benzyl Benzoate	-0.005	-0.006
Bornyl Acetate	-0.002	0.011
Camphor	-0.004	0.022
Carvone	0.002	0.013
Chamazulene	-0.002	0.000
Citral	-0.002	-0.003
Citronellal	-0.011	-0.010
Citronellol	-0.036	-0.040
Citronellyl Formate	-0.003	-0.006
Curzerene	-0.008	0.000
Estragole	-0.010	-0.049
Eugenol	-0.006	-0.022
Farnesol	-0.001	-0.001
Furanoeudesma-1,3-diene	-0.011	-0.001
Geranial	-0.018	-0.002
Geraniol	-0.054	-0.083
Geranyl Acetate	-0.013	-0.028
Incensole Acetate	-0.001	0.012
Indole	-0.002	-0.003
Isoamyl angelate	-0.004	0.003
Isobutyl angelate	-0.010	0.007
Isomenthone	-0.002	0.001
Isovalencenol	-0.002	0.000
Italidione II	-0.001	0.003
Khusimol	-0.006	0.000
Lavandulol	-0.001	-0.010
Limonene	0.982	0.007
Linalool	-0.067	-0.521
Linalyl Acetate	-0.035	-0.421
Lindestrene	-0.004	0.000
Menthofuran	-0.005	0.003
Menthol	-0.055	0.023
Menthone	-0.010	0.005
Menthyl Acetate	-0.002	0.001
Methallyl angelate	-0.002	0.001
Methyl Salicylate	-0.048	-0.020
Neral	-0.014	-0.002
Nerol	-0.003	-0.002
Neryl Acetate	-0.014	0.042
Nonadecane	-0.004	-0.003
Patchouli Alcohol	-0.007	0.000

Sabinene	0.000	0.018
Seychellene	-0.003	0.000
Terpinen-4-ol	-0.017	-0.003
Verbenone	-0.002	0.011
cis-Jasmone	-0.002	-0.004
epi- β -Santalol	-0.004	0.000
p-Cymene	0.002	0.000
α -Bisabolol	-0.002	0.000
α -Bisabolol Oxide A	-0.011	-0.001
α -Bisabolol Oxide B	-0.009	-0.001
α -Copaene	-0.003	-0.003
α -Farnesene	-0.003	-0.005
α -Guaiene	-0.005	0.000
α -Himachalene	-0.006	0.000
α -Murolene	-0.004	-0.019
α -Pinene	-0.080	0.626
α -Santalol	-0.020	-0.001
α -Terpineol	-0.009	-0.055
α -Thujene	-0.002	0.024
α -Vetivone	-0.001	0.000
β -Caryophyllene	-0.039	-0.070
β -Farnesene (E)	-0.008	0.000
β -Himachalene	-0.017	-0.001
β -Myrcene	0.015	0.026
β -Ocimene	-0.001	-0.009
β -Pinene	0.034	0.044
β -Santalol	-0.008	-0.001
β -Selinene	-0.002	0.005
β -Vetivenene	-0.002	0.000
β -Vetivone	-0.001	0.000
γ -Cadinene	-0.002	-0.002
γ -Curcumene	-0.006	0.015
γ -Himachalene	-0.002	0.000
γ -Terpinene	0.073	-0.002
δ -3-Carene	-0.016	0.124
δ -Cadinene	-0.002	-0.002
δ -Guaiene	-0.007	0.000

Notes. Loadings were computed on the oil $\times$ compound matrix (percent-by-weight, $\geq 0.5\%$ w/w) without standardization. Zeros denote $<0.5\%$ or not reported. Signs oriented so PC1 aligns positively with limonene. PC1 = 30.9%, PC2 = 8.7% (total 39.6%).

Supplementary Table S5. Physicochemical descriptors per compound.

Compound	Polarizability_A3	MolarVolume mL_per_mol	MV_to_Alpha	Source Short	Proxy
Limonene	17.964	161.7	9.002	Symrise TDS	N
γ -Terpinene	17.565	157.7	8.977	Sigma TDS	N
α -Pinene	17.399	158.8	9.126	Sigma TDS	N
Linalool	19.569	179.4	9.166	PubChem	N
Linalyl Acetate	23.339	217.9	9.335	Sigma TDS	N
1,8-Cineole	17.991	166.7	9.264	Sigma TDS	N
Menthol	18.989	175.6	9.247	Sigma TDS	N
δ -3-Carene	17.565	157.7	8.977	Sigma TDS	N
Geraniol	19.547	175.5	8.978	Sigma TDS	N
β -Pinene	17.794	158.6	8.913	Sigma TDS	N
Neryl Acetate	23.416	215.7	9.212	Sigma TDS	N
Citronellol	19.692	182.8	9.282	Sigma TDS	N
β -Caryophyllene	26.44	226.8	8.578	Sigma TDS	N
Methyl Salicylate	16.017	129.6	8.091	Sigma TDS	N
α -Terpineol	18.742	165.9	8.85	Sigma TDS	N
Camphor	19.265	153.5	7.966	PubChem	N
Terpinen-4-ol	18.562	165.2	8.897	Sigma TDS	N
Estragole	18.535	153.6	8.286	Sigma TDS	N
β -Myrcene	19.012	172.2	9.059	Sigma TDS	N
Geranyl Acetate	23.306	214.3	9.195	Sigma TDS	N
Sabinene	17.662	159.7	9.043	Ventos COA	N
α -Thujene	17.381	162.9	9.371	Aurochemicals	N

p-Cymene	17.884	156.1	8.727	Sigma TDS	N
δ-Cadinene	26.939	227.1	8.429	Ventos COA	Y
γ-Cadinene	26.939	227.1	8.429	Provisional	Y
Bornyl Acetate	21.733	199.1	9.16	Sigma TDS	N
Verbenone	17.775	153.6	8.641	DrugFuture	N
α-Copaene	25.734	224.6	8.726	ChemicalBook	N
Lavandulol	19.428	175.7	9.043	Vendor/industry TDS	N
Carvone	18.148	156.5	8.622	Sigma TDS	N
β-Ocimene	19.259	169.2	8.788	Ventos COA	N
Neral	19.496	171.1	8.774	Echemi	N
Geranial	19.577	171.4	8.757	Sigma TDS	Y
Menthone	18.393	172.4	9.37	Ventos COA	N
Citronellal	19.299	180.8	9.37	Ventos COA	N
Eugenol	19.167	153.9	8.029	Spectrum	N
Incensole Acetate	40.551	352.0	8.681	SelleckChem	Y
Patchouli Alcohol	25.33	216.2	8.536	Wikipedia	N
α-Santalol	26.835	229.5	8.554	PubChem	N
Benzyl Benzoate	24.617	189.8	7.712	Sigma TDS	N
Citronellyl Formate	21.702	205.3	9.461	Ventos COA	N
Benzyl Acetate	16.65	142.3	8.549	Ventos COA	N
Menthofuran	17.636	155.7	8.827	PubChem	N
Menthyl Acetate	22.843	215.8	9.446	PubChem	N
Isomenthone	18.344	171.4	9.343	Ventos COA	N
Seychellene	26.939	227.1	8.429	Ventos COA	Y
α-Guaiene	26.958	227.1	8.423	BASF	N
δ-Guaiene	26.537	223.5	8.422	CAS Common Chemistry	N
α-Himachalene	27.425	233.3	8.506	Proxy from	Y
β-Himachalene	27.425	233.3	8.506	Proxy from	Y
γ-Himachalene	27.425	233.3	8.506	Proxy from	Y
epi-β-Santalol	27.21	229.5	8.436	Isobionics	Y
β-Santalol	26.882	226.8	8.436	DrugFuture	Y
Khusimol	26.407	216.0	8.181	LookChem	N
Isovalencenol	25.33	216.2	8.536	Proxy from Patchouli	Y
β-Vetivenene	26.519	232.2	8.757	Proxy from	Y
α-Vetivone	27.003	217.7	8.061	DrugFuture	N
β-Vetivone	26.769	218.3	8.156	DrugFuture	N
α-Bisabolol	27.685	239.1	8.637	TCI	N
α-Bisabolol Oxide A	29.626	256.3	8.652	Aurochemicals	Y
α-Bisabolol Oxide B	29.626	256.3	8.652	Aurochemicals	Y
Chamazulene	23.544	186.5	7.92	Wikipedia	N
β-Farnesene (E)	28.034	245.9	8.772	DrugFuture	N
α-Farnesene	27.535	243.0	8.825	DrugFuture	N
γ-Curcumene	26.939	227.1	8.429	Ventos COA	Y
β-Selinene	26.519	232.2	8.757	LookChem	N
Italidione II	27.562	247.9	8.994	Robertet	Y
Furanoeudesma-1,3-diene	27.352	220.3	8.054	Proxy from Curzerene	Y
Curzerene	27.352	220.3	8.054	ChemicalBook	N
Lindestrene	25.734	224.6	8.726	Proxy from	Y
α-Murolene	27.425	233.3	8.506	GoodScents	N
Isobutyl angelate	18.386	178.1	9.688	Perflavory	N
Isoamyl angelate	19.929	191.0	9.583	FlavScents/ChemBook	N
Methallyl angelate	17.818	168.9	9.479	Chemsrc/ChemicalBull	N
Nerol	19.614	176.1	8.977	Sigma TDS	N
Nonadecane	35.772	341.8	9.556	NMPPDB	N
cis-Jasmone	20.312	174.5	8.593	Ventos COA	N
Indole	13.541	96.0	7.091	ChemicalBook	N
Citral	19.624	171.2	8.727	Sigma TDS	N
Farnesol	28.711	251.0	8.742	Sigma TDS	N

Notes. Polarizability ($\text{\AA}^3$) and molar volume (mL/mol) were derived via the Lorentz–Lorenz relation. MV_to_Alpha denotes molar volume / polarizability. Source_Short summarizes the primary data source; Proxy flags entries where family/isomer/temperature proxies were explicitly used. For reproducibility of section 4.5, the exploratory grouping used in the single-feature analysis is provided in Supplementary Data S5b as column “Exploratory_Group”.

Supplementary Table S6. Pearson correlations for all compounds under literature labels, with FDR.

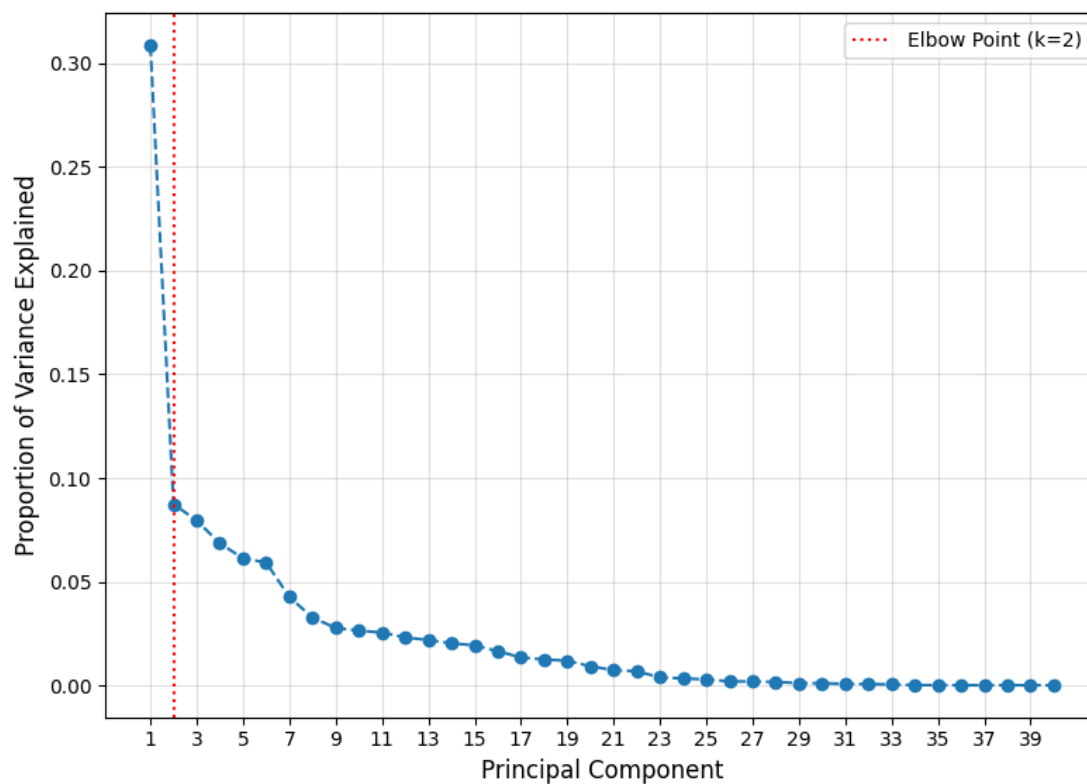
Mood	Compound	r	p	q_FDR
Calming	β -Caryophyllene	0.218	0.177	0.628
Calming	Linalyl Acetate	0.185	0.253	0.628
Calming	Citronellol	0.180	0.265	0.628
Calming	epi- β -Santalol	0.152	0.348	0.628
Calming	α -Santalol	0.152	0.348	0.628
Calming	Benzyl Benzoate	0.152	0.348	0.628
Calming	β -Santalol	0.152	0.348	0.628
Calming	Italidione II	0.152	0.348	0.628
Calming	Khusimol	0.152	0.348	0.628
Calming	Lavandulol	0.152	0.348	0.628
Calming	α -Vetivone	0.152	0.348	0.628
Calming	Lindestrene	0.152	0.348	0.628
Calming	α -Thujene	0.152	0.348	0.628
Calming	Isovalencenol	0.152	0.348	0.628
Calming	α -Muurolene	0.152	0.348	0.628
Calming	Neral	0.152	0.348	0.628
Calming	α -Copaene	0.152	0.348	0.628
Calming	Nonadecane	0.152	0.348	0.628
Calming	Patchouli Alcohol	0.152	0.348	0.628
Calming	α -Bisabolol Oxide B	0.152	0.348	0.628
Calming	α -Bisabolol Oxide A	0.152	0.348	0.628
Calming	α -Bisabolol	0.152	0.348	0.628
Calming	α -Himachalene	0.152	0.348	0.628
Calming	p-Cymene	0.152	0.348	0.628
Calming	β -Vetivone	0.152	0.348	0.628
Calming	β -Farnesene (E)	0.152	0.348	0.628
Calming	Incensole Acetate	0.152	0.348	0.628
Calming	β -Himachalene	0.152	0.348	0.628
Calming	δ -Cadinene	0.152	0.348	0.628
Calming	β -Ocimene	0.152	0.348	0.628
Calming	γ -Himachalene	0.152	0.348	0.628
Calming	β -Selinene	0.152	0.348	0.628
Calming	β -Vetivenene	0.152	0.348	0.628
Calming	Curzerene	0.152	0.348	0.628
Calming	γ -Curcumene	0.152	0.348	0.628
Calming	Chamazulene	0.152	0.348	0.628
Calming	γ -Cadinene	0.152	0.348	0.628
Calming	Isobutyl angelate	0.152	0.348	0.628
Calming	Seychellene	0.152	0.348	0.628
Calming	Methallyl angelate	0.152	0.348	0.628
Calming	Citronellyl Formate	0.152	0.348	0.628
Calming	α -Guaiene	0.152	0.348	0.628
Calming	Isoamyl angelate	0.152	0.348	0.628
Calming	Furanocudesma-1,3-diene	0.152	0.348	0.628
Calming	Geranial	0.152	0.348	0.628
Calming	Nerol	0.152	0.348	0.628
Calming	δ -Guaiene	0.152	0.348	0.628
Calming	Linalool	0.148	0.361	0.628
Calming	Neryl Acetate	0.142	0.381	0.628
Calming	α -Terpineol	0.141	0.387	0.628
Calming	Geranyl Acetate	0.021	0.896	0.904
Calming	δ -3-Carene	0.017	0.915	0.919
Calming	α -Pinene	-0.028	0.864	0.879
Calming	γ -Terpinene	-0.122	0.452	0.628
Calming	Geraniol	-0.133	0.413	0.628
Calming	Terpinen-4-ol	-0.168	0.299	0.628
Calming	Carvone	-0.168	0.299	0.628
Calming	Citral	-0.168	0.299	0.628
Calming	Menthofuran	-0.168	0.299	0.628
Calming	Farnesol	-0.168	0.299	0.628
Calming	α -Farnesene	-0.168	0.299	0.628
Calming	Methyl Salicylate	-0.168	0.299	0.628
Calming	cis-Jasmone	-0.168	0.299	0.628
Calming	Citronellal	-0.168	0.299	0.628
Calming	Estragole	-0.168	0.299	0.628
Calming	Indole	-0.168	0.299	0.628

Calming	Isomenthone	-0.168	0.299	0.628
Calming	Menthyl Acetate	-0.168	0.299	0.628
Calming	Benzyl Acetate	-0.168	0.299	0.628
Calming	Verbenone	-0.168	0.299	0.628
Calming	Camphor	-0.168	0.299	0.628
Calming	Bornyl Acetate	-0.168	0.299	0.628
Calming	Menthone	-0.220	0.173	0.628
Calming	Menthol	-0.233	0.147	0.628
Calming	Sabinene	-0.234	0.147	0.628
Calming	β -Myrcene	-0.237	0.141	0.628
Calming	Eugenol	-0.239	0.138	0.628
Calming	1,8-Cineole	-0.244	0.130	0.628
Calming	Limonene	-0.259	0.106	0.628
Calming	β -Pinene	-0.334	0.035	0.628
Uplifting	Limonene	0.584	0.000	0.018
Uplifting	β -Pinene	0.332	0.036	0.628
Uplifting	Geraniol	0.319	0.045	0.628
Uplifting	Indole	0.297	0.063	0.628
Uplifting	α -Farnesene	0.297	0.063	0.628
Uplifting	cis-Jasmone	0.297	0.063	0.628
Uplifting	Citral	0.297	0.063	0.628
Uplifting	Citronellal	0.297	0.063	0.628
Uplifting	Benzyl Acetate	0.297	0.063	0.628
Uplifting	Farnesol	0.297	0.063	0.628
Uplifting	γ -Terpinene	0.231	0.151	0.628
Uplifting	Geranyl Acetate	0.191	0.239	0.628
Uplifting	Eugenol	0.111	0.497	0.628
Uplifting	β -Myrcene	0.070	0.667	0.696
Uplifting	Sabinene	0.049	0.763	0.779
Uplifting	Linalyl Acetate	-0.024	0.884	0.895
Uplifting	Citronellol	-0.066	0.688	0.712
Uplifting	Neryl Acetate	-0.069	0.673	0.699
Uplifting	δ -Guaiane	-0.086	0.597	0.628
Uplifting	Menthofuran	-0.086	0.597	0.628
Uplifting	β -Ocimene	-0.086	0.597	0.628
Uplifting	α -Guaiane	-0.086	0.597	0.628
Uplifting	Nonadecane	-0.086	0.597	0.628
Uplifting	Incensole Acetate	-0.086	0.597	0.628
Uplifting	Chamazulene	-0.086	0.597	0.628
Uplifting	epi- β -Santalol	-0.086	0.597	0.628
Uplifting	Geranial	-0.086	0.597	0.628
Uplifting	α -Bisabolol	-0.086	0.597	0.628
Uplifting	α -Bisabolol Oxide A	-0.086	0.597	0.628
Uplifting	α -Bisabolol Oxide B	-0.086	0.597	0.628
Uplifting	α -Copaene	-0.086	0.597	0.628
Uplifting	Carvone	-0.086	0.597	0.628
Uplifting	α -Santalol	-0.086	0.597	0.628
Uplifting	Terpinen-4-ol	-0.086	0.597	0.628
Uplifting	α -Thujene	-0.086	0.597	0.628
Uplifting	α -Vetivone	-0.086	0.597	0.628
Uplifting	β -Farnesene (E)	-0.086	0.597	0.628
Uplifting	Camphor	-0.086	0.597	0.628
Uplifting	Bornyl Acetate	-0.086	0.597	0.628
Uplifting	β -Santalol	-0.086	0.597	0.628
Uplifting	β -Vetivenene	-0.086	0.597	0.628
Uplifting	β -Vetivone	-0.086	0.597	0.628
Uplifting	Benzyl Benzoate	-0.086	0.597	0.628
Uplifting	Verbenone	-0.086	0.597	0.628
Uplifting	p-Cymene	-0.086	0.597	0.628
Uplifting	Seychellene	-0.086	0.597	0.628
Uplifting	Menthyl Acetate	-0.086	0.597	0.628
Uplifting	Isobutyl angelate	-0.086	0.597	0.628
Uplifting	Isovalencenol	-0.086	0.597	0.628
Uplifting	Khusimol	-0.086	0.597	0.628
Uplifting	Lavandulol	-0.086	0.597	0.628
Uplifting	Furanoecdysma-1,3-diene	-0.086	0.597	0.628
Uplifting	Lindestrone	-0.086	0.597	0.628
Uplifting	Methyl Salicylate	-0.086	0.597	0.628
Uplifting	Patchouli Alcohol	-0.086	0.597	0.628
Uplifting	Curzerene	-0.086	0.597	0.628

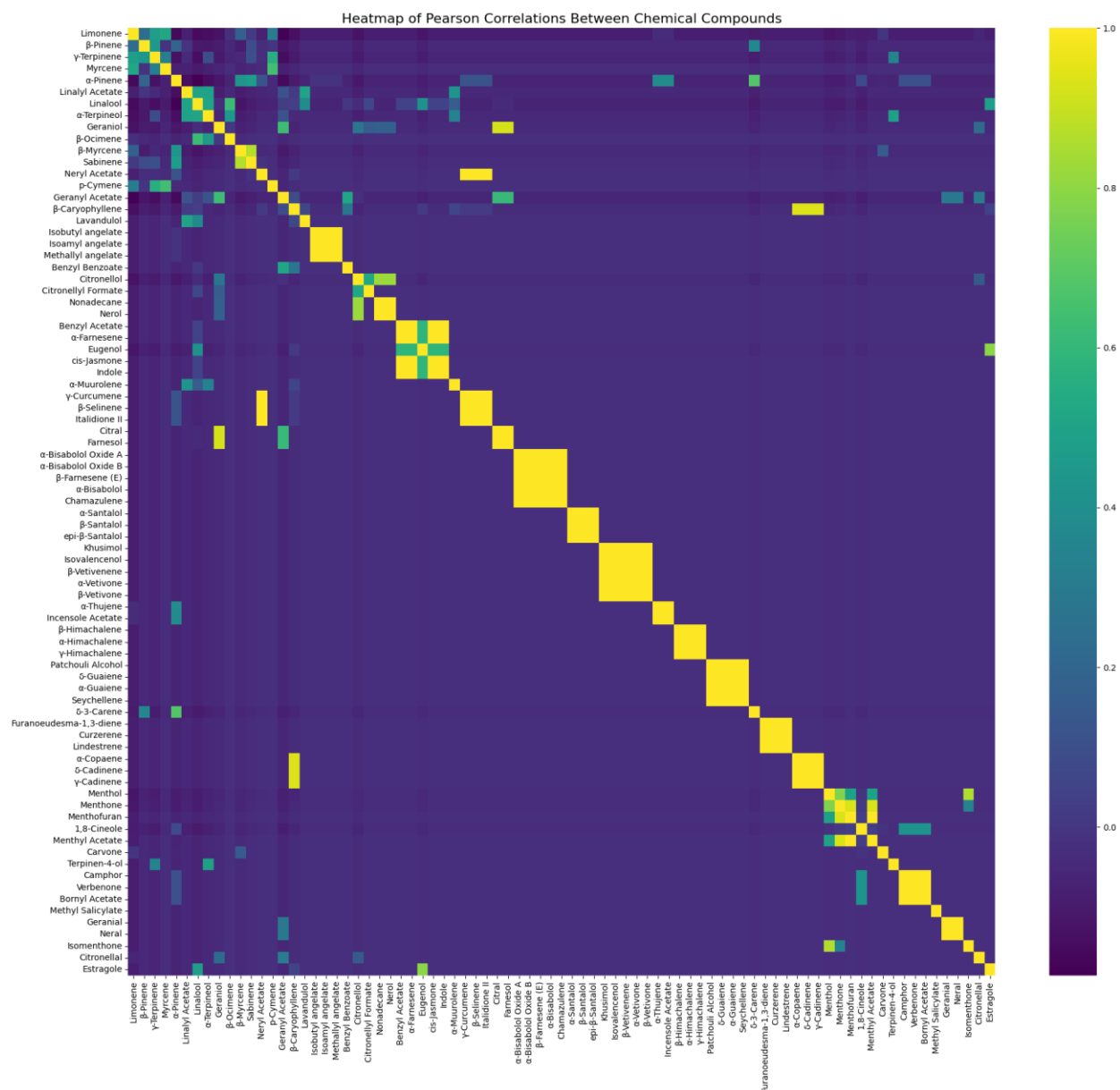
Uplifting	Nerol	-0.086	0.597	0.628
Uplifting	Neral	-0.086	0.597	0.628
Uplifting	Methallyl angelate	-0.086	0.597	0.628
Uplifting	Isomenthone	-0.086	0.597	0.628
Uplifting	β -Selinene	-0.086	0.597	0.628
Uplifting	Italidione II	-0.086	0.597	0.628
Uplifting	β -Himachalene	-0.086	0.597	0.628
Uplifting	γ -Himachalene	-0.086	0.597	0.628
Uplifting	Citronellyl Formate	-0.086	0.597	0.628
Uplifting	Estragole	-0.086	0.597	0.628
Uplifting	Isoamyl angelate	-0.086	0.597	0.628
Uplifting	γ -Curcumene	-0.086	0.597	0.628
Uplifting	δ -Cadinene	-0.086	0.597	0.628
Uplifting	α -Muurolene	-0.086	0.597	0.628
Uplifting	α -Himachalene	-0.086	0.597	0.628
Uplifting	γ -Cadinene	-0.086	0.597	0.628
Uplifting	Menthone	-0.113	0.489	0.628
Uplifting	Menthol	-0.120	0.462	0.628
Uplifting	Linalool	-0.122	0.455	0.628
Uplifting	δ -3-Carene	-0.123	0.451	0.628
Uplifting	1,8-Cineole	-0.125	0.443	0.628
Uplifting	β -Caryophyllene	-0.139	0.391	0.628
Uplifting	α -Terpineol	-0.177	0.276	0.628
Uplifting	α -Pinene	-0.211	0.192	0.628
Stimulating	1,8-Cineole	0.401	0.010	0.628
Stimulating	Menthol	0.384	0.014	0.628
Stimulating	Menthone	0.362	0.022	0.628
Stimulating	Estragole	0.277	0.083	0.628
Stimulating	Isomenthone	0.277	0.083	0.628
Stimulating	Menthyl Acetate	0.277	0.083	0.628
Stimulating	Terpinen-4-ol	0.277	0.083	0.628
Stimulating	Menthofuran	0.277	0.083	0.628
Stimulating	Carvone	0.277	0.083	0.628
Stimulating	Verbenone	0.277	0.083	0.628
Stimulating	Bornyl Acetate	0.277	0.083	0.628
Stimulating	Camphor	0.277	0.083	0.628
Stimulating	Methyl Salicylate	0.277	0.083	0.628
Stimulating	α -Pinene	0.236	0.144	0.628
Stimulating	Sabinene	0.222	0.169	0.628
Stimulating	β -Myrcene	0.206	0.203	0.628
Stimulating	Eugenol	0.168	0.299	0.628
Stimulating	δ -3-Carene	0.098	0.547	0.628
Stimulating	β -Pinene	0.064	0.693	0.713
Stimulating	α -Terpineol	0.008	0.960	0.960
Stimulating	Linalool	-0.054	0.741	0.760
Stimulating	γ -Terpinene	-0.082	0.615	0.644
Stimulating	Seychellene	-0.092	0.570	0.628
Stimulating	Patchouli Alcohol	-0.092	0.570	0.628
Stimulating	Nonadecane	-0.092	0.570	0.628
Stimulating	Nerol	-0.092	0.570	0.628
Stimulating	α -Guaiane	-0.092	0.570	0.628
Stimulating	α -Farnesene	-0.092	0.570	0.628
Stimulating	δ -Guaiane	-0.092	0.570	0.628
Stimulating	Farnesol	-0.092	0.570	0.628
Stimulating	Lavandulol	-0.092	0.570	0.628
Stimulating	Citral	-0.092	0.570	0.628
Stimulating	Benzyl Benzoate	-0.092	0.570	0.628
Stimulating	β -Vetivenene	-0.092	0.570	0.628
Stimulating	β -Ocimene	-0.092	0.570	0.628
Stimulating	α -Vetivone	-0.092	0.570	0.628
Stimulating	Curzerene	-0.092	0.570	0.628
Stimulating	p-Cymene	-0.092	0.570	0.628
Stimulating	Furanocudesma-1,3-diene	-0.092	0.570	0.628
Stimulating	Geranial	-0.092	0.570	0.628
Stimulating	β -Vetivone	-0.092	0.570	0.628
Stimulating	Lindestrene	-0.092	0.570	0.628
Stimulating	Neral	-0.092	0.570	0.628
Stimulating	Khusimol	-0.092	0.570	0.628
Stimulating	Isovalencenol	-0.092	0.570	0.628
Stimulating	Indole	-0.092	0.570	0.628

Stimulating	Incensole Acetate	-0.092	0.570	0.628
Stimulating	β -Selinene	-0.092	0.570	0.628
Stimulating	β -Santalol	-0.092	0.570	0.628
Stimulating	Italidione II	-0.092	0.570	0.628
Stimulating	Citronellal	-0.092	0.570	0.628
Stimulating	β -Farnesene (E)	-0.092	0.570	0.628
Stimulating	γ -Curcumene	-0.092	0.570	0.628
Stimulating	α -Thujene	-0.092	0.570	0.628
Stimulating	γ -Himachalene	-0.092	0.570	0.628
Stimulating	α -Santalol	-0.092	0.570	0.628
Stimulating	Citronellyl Formate	-0.092	0.570	0.628
Stimulating	α -Bisabolol Oxide A	-0.092	0.570	0.628
Stimulating	α -Himachalene	-0.092	0.570	0.628
Stimulating	Methallyl angelate	-0.092	0.570	0.628
Stimulating	Chamazulene	-0.092	0.570	0.628
Stimulating	α -Copaene	-0.092	0.570	0.628
Stimulating	γ -Cadinene	-0.092	0.570	0.628
Stimulating	α -Bisabolol	-0.092	0.570	0.628
Stimulating	epi- β -Santalol	-0.092	0.570	0.628
Stimulating	cis-Jasmone	-0.092	0.570	0.628
Stimulating	Isoamyl angelate	-0.092	0.570	0.628
Stimulating	Benzyl Acetate	-0.092	0.570	0.628
Stimulating	δ -Cadinene	-0.092	0.570	0.628
Stimulating	α -Bisabolol Oxide B	-0.092	0.570	0.628
Stimulating	Isobutyl angelate	-0.092	0.570	0.628
Stimulating	α -Muurolene	-0.092	0.570	0.628
Stimulating	β -Himachalene	-0.092	0.570	0.628
Stimulating	Neryl Acetate	-0.098	0.548	0.628
Stimulating	β -Caryophyllene	-0.117	0.472	0.628
Stimulating	Citronellol	-0.145	0.372	0.628
Stimulating	Geraniol	-0.154	0.344	0.628
Stimulating	Linalyl Acetate	-0.190	0.239	0.628
Stimulating	Geranyl Acetate	-0.208	0.197	0.628
Stimulating	Limonene	-0.264	0.099	0.628

Notes. For each mood class, the table reports r , two-sided p , and Benjamini–Hochberg FDR-adjusted q . Only limonene was significant after FDR ($q = 0.018$). Nominally significant associations (e.g., 1,8-cineole/menthol/menthone for Stimulating) are retained for transparency. Repeated r and p values show co-occurrence of subsets of compounds across the same oils (see main text section 4.1 Notes).



Supplementary Figure S1. PCA Scree Plot Showing Variance Explained by Each Component.



Supplementary Figure S2. Heatmap of Pearson Correlations Between All Chemical Compounds.

