Article

Phytochemical Screening and Antibacterial Activity of Commercially Available Essential Oils Combinations With Conventional Antibiotics Against Gram-Positive and Gram-Negative Bacteria

**Supplementary Material: Figure S1 and Table S1**

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| **Clove Essential Oil** |
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| **Eucalyptus Essential Oil** |
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| **Lavender Essential Oil** |
|  |
| **Peppermint Essential Oil** |
|  |
| **Oregano Essential Oil** |

**Figure S1.** GC-MS Chromatograms of Essential Oils References

**Table S1.** The Phytochemicals identified and quantified in Essential Oils by GC-MS analysis

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RT [min] | Compound name | Clove oil | | Eucalyptus oil | | Lavender oil | | Peppermint oil | | Oregano oil | |
| Reference [%] | Sample [%] | Reference [%] | Sample [%] | Reference [%] | Sample [%] | Reference [%] | Sample [%] | Reference [%] | Sample [%] |
| 12.83 | Furfural | 0.0712 | 0.0507 |  |  |  |  |  |  |  |  |
| 14.20 | a-Thujene |  |  | 0.0043 | 0.0121 |  |  | 0.0280 | 0.0298 | 1.1321 | 0.0121 |
| 14.79 | α-Pinene |  |  | 1.7079 | 2.8165 | 5.6669 | 3.1612 | 0.7020 | 0.8279 | 0.8698 | 2.3971 |
| 15.92 | Camphene |  |  | 0.0047 | 0.0551 | 1.6620 | 0.3272 | 0.0065 | 0.0058 | 0.2100 | 0.0197 |
| 16.96 | Isocamphane |  |  |  |  |  | 0.0123 |  |  |  |  |
| 17.11 | Sabinen |  |  |  |  |  |  | 0.4209 | 0.3986 |  |  |
| 17.32 | α-Myrcene |  |  | 0.5530 | 0.3272 | 1.5522 | 0.6436 | 0.0931 | 0.1196 | 1.4758 | 0.0566 |
| 17.46 | β-Pinene |  |  | 0.3913 | 0.2631 | 1.6132 | 0.0478 | 0.9989 | 0.8802 | 0.1332 | 1.3942 |
| 18.72 | β-Thujene |  |  | 0.9446 | 0.4638 |  |  |  |  |  |  |
| 18.92 | 3-Carene |  |  | 0.0517 | 0.0033 | 1.8368 | 0.0007 |  |  | 0.0707 |  |
| 19.47 | Terpinolen |  |  | 0.1711 | 0.1066 |  |  |  |  |  |  |
| 19.89 | α-Ocimene |  |  | 0.1010 | 0.0704 | 0.0672 | 0.8177 | 0.0996 | 0.1088 |  |  |
| 20.10 | Limonene |  |  | 6.6187 | 5.4506 | 0.2892 | 1.1219 | 2.5104 | 2.0857 | 0.2360 | 0.6877 |
| 20.42 | o-Cymene |  |  | 4.7347 | 4.1323 | 3.0292 | 0.2470 | 0.4738 | 0.1803 | 10.1224 | 16.2692 |
| 20.57 | α-Phellandrene |  |  | 0.1339 | 0.1070 |  |  | 0.0208 | 0.0271 |  |  |
| 21.00 | Eucalyptol |  |  | 81.9587 | 83.7478 | 1.4208 | 0.7360 | 5.9016 | 5.0452 | 0.0193 | 0.8904 |
| 21.77 | ç-Terpinene |  |  | 2.6225 | 2.2315 | 0.1248 | 0.0000 | 0.2195 | 0.2864 | 5.1776 | 2.9827 |
| 24.67 | Linalool oxide |  |  |  |  | 0.0470 | 0.0738 |  |  |  |  |
| 24.81 | cis-β-Terpineol |  |  |  |  |  |  |  |  | 0.1934 |  |
| 26.16 | Linalool |  |  |  | 0.0102 | 35.8533 | 52.9348 | 0.1058 | 0.0670 | 0.0200 | 1.4072 |
| 28.14 | Thujone |  |  |  | 0.0113 |  |  |  |  |  |  |
| 28.23 | 1,2-Dihydrolinalool |  |  |  |  |  | 0.4868 |  |  |  |  |
| 30.16 | Menthofuran |  |  |  |  |  |  | 2.8505 | 2.4656 |  |  |
| 31.21 | Lavandulol |  |  |  |  | 0.1657 |  |  |  |  |  |
| 31.32 | L-Menthone |  |  |  |  |  |  |  |  |  | 0.2304 |
| 31.34 | Isomenthone |  |  |  |  |  |  | 29.3657 | 26.5289 |  |  |
| 31.48 | Camphor |  |  |  | 0.0138 | 0.2553 | 1.3463 |  |  |  |  |
| 32.01 | Terpinen-4-ol |  |  |  | 0.0373 | 1.6204 | 0.6385 | 0.4541 | 0.3867 | 0.4100 | 0.0163 |
| 32.23 | Neoisomenthol |  |  |  |  |  |  | 50.8339 | 55.0951 |  |  |
| 32.61 | endo-Borneol |  |  |  | 0.0002 | 2.7675 | 0.0107 | 0.0130 | 0.0069 | 0.2792 |  |
| 32.80 | Dihydrocitronellol |  |  |  |  |  | 0.0246 |  |  |  |  |
| 33.41 | α-Terpineol |  |  | 0.0018 | 0.0956 | 0.4730 | 0.9501 | 0.4157 | 0.3909 | 0.0633 | 0.0020 |
| 33.76 | Terpinyl formate |  |  |  |  |  | 0.1275 |  |  |  |  |
| 34.18 | Methyl salicylate | 0.0411 | 0.0581 |  |  |  |  |  |  |  |  |
| 34.25 | (-)-trans-Isopiperitenol |  |  |  |  |  |  |  | 0.0160 |  |  |
| 34.40 | Isopulegol acetate |  |  |  |  |  | 0.0616 |  |  |  |  |
| 34.54 | γ-Terpinen |  |  |  |  |  |  |  | 0.0076 |  |  |
| 35.25 | Citronellol |  |  |  |  | 0.0247 |  | 0.0027 | 0.0067 |  |  |
| 35.44 | Dihydrocarvone |  |  |  |  |  |  |  |  | 0.0161 |  |
| 35.69 | Linalyl acetate |  |  |  |  | 36.2963 | 32.3146 |  |  |  | 0.0152 |
| 35.85 | Menthyl formate |  |  |  |  |  |  | 0.0065 |  |  |  |
| 37.16 | Geraniol |  |  |  |  | 0.2540 |  |  |  |  |  |
| 37.37 | Pulegone |  |  |  |  |  |  | 1.1453 | 0.8421 |  |  |
| 37.85 | Neoisomenthyl acetate |  |  |  |  |  |  | 0.2541 | 0.3132 |  |  |
| 38.01 | Lavandulyl acetate |  |  |  |  | 0.8589 |  |  |  |  |  |
| 38.09 | Carvone |  |  |  |  |  |  | 0.0755 | 0.0319 | 0.0108 |  |
| 39.06 | Borneol acetate |  |  |  | 0.0430 | 0.0009 |  |  |  |  |  |
| 39.45 | Isobornyl acetate |  |  |  |  |  | 0.1546 |  |  |  |  |
| 39.55 | Anethole |  |  |  | 0.0012 |  |  |  |  |  |  |
| 39.55 | Isopiperitenone |  |  |  |  |  |  | 0.3873 | 0.9866 |  |  |
| 41.23 | α-Cubebene |  |  |  |  | 0.0007 |  |  |  |  |  |
| 41.77 | Chavicol | 0.0205 | 0.0665 |  |  |  |  |  |  |  |  |
| 42.31 | Carvacrol |  |  |  |  |  |  | 0.0218 | 0.0162 | 0.2040 |  |
| 42.95 | Nerol |  |  |  |  | 1.6308 | 2.1132 |  |  |  |  |
| 43.29 | p-Thymol |  |  |  |  |  |  |  | 0.0896 | 77.9238 | 72.0862 |
| 43.38 | Copaene | 0.0616 | 0.0944 |  |  |  |  | 0.0100 |  |  |  |
| 44.14 | Geranyl acetate |  |  |  |  | 0.2008 | 0.8031 |  |  |  |  |
| 44.33 | Chavicol acetate |  | 0.0017 |  |  |  |  |  |  |  |  |
| 44.38 | α-Bourbonene |  |  |  |  |  |  | 0.1275 | 0.2632 |  |  |
| 44.70 | β-Elemene |  |  |  |  |  |  | 0.0490 | 0.0651 |  |  |
| 45.53 | Carvacrol acetate |  |  |  |  |  |  |  |  | 0.0226 |  |
| 45.79 | Eugenol | 87.0884 | 86.2272 |  |  |  |  |  |  |  |  |
| 45.87 | Santalen |  |  |  |  | 0.0373 |  |  |  |  |  |
| 46.62 | β-Ylangene |  |  |  |  |  |  | 0.0221 | 0.2274 |  |  |
| 47.29 | Caryophyllene | 9.8462 | 6.8733 |  |  | 2.0263 |  | 1.9040 | 1.6170 | 1.0352 | 1.4581 |
| 49.59 | Humulene | 0.9997 | 0.6717 |  |  | 0.0930 |  | 0.0513 | 0.0575 | 0.1180 |  |
| 50.85 | à-Farnesene | 0.0121 |  |  |  |  |  |  |  |  |  |
| 51.27 | α-Bisabolene |  |  |  |  |  |  |  |  | 0.2043 |  |
| 51.30 | Germacrene D |  |  |  |  | 0.0894 |  | 0.2735 | 0.4228 |  |  |
| 52.58 | ç-Muurolene |  |  |  |  | 0.0424 |  |  |  | 0.0004 |  |
| 52.60 | δ-Cadinene | 0.0332 | 0.0548 |  |  |  |  | 0.0275 | 0.0937 |  |  |
| 53.10 | trans-α-Bisabolene |  |  |  |  |  | 0.8443 |  |  |  |  |
| 53.61 | Calamenene |  | 0.0068 |  |  |  |  |  |  |  |  |
| 56.43 | Eugenol acetate | 1.5998 | 5.7515 |  |  |  |  |  |  |  |  |
| 59.14 | Caryophyllenyl alcohol | 0.0587 |  |  |  |  |  |  |  |  |  |
| 59.44 | Spathulenol |  |  |  |  |  |  | 0.0145 |  |  |  |
| 59.88 | Mint furanone |  |  |  |  |  |  | 0.0482 | 0.0004 |  |  |
| 60.28 | Caryophyllene oxide | 0.1673 | 0.1433 |  |  |  |  | 0.0657 | 0.0063 | 0.0521 | 0.0748 |