Table 1 Compound inthe essential oil of *Echinophora cinerea* *Boiss*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Compound a** | **RT(min)** | **RIb** | **GC (%)** |
| **1** | Trimethyl cyclopentadiene | 7.62 | 856 | 0.72 |
| **2** | M-xylene | 7.89 | 870 | 0.06 |
| **3** | α-thujene | 9.22 | 938 | 0.99 |
| **4** | α-pinene | 9.47 | 939 | 9.79 |
| **5** | Camphene | 9.86 | 955 | 0.15 |
| **6** | Sabinene | 10.41 | 977 | 0.94 |
| **7** | -βpinene | 10.58 | 984 | 0.8 |
| **8** | -βMyrcene | 10.73 | 990 | 2.65 |
| **9** | dehydro-1.8-cineole | 10.84 | 994 | 0.04 |
| **10** | -αphellandrene | 11.38 | 1016 | 32.09 |
| **11** | -αTerpinene | 11.57 | 1021 | 0.18 |
| **12** | p-Cymene | 11.79 | 1029 | 10.75 |
| **13** | Limonene | 12.01 | 1037 | 16.28 |
| **14** | -γTerpinene | 12.69 | 1061 | 0.73 |
| **15** | -αTerpinolene | 13.55 | 1092 | 0.41 |
| **16** | Fenchone | 13.59 | 1094 | 0.27 |
| **17** | Linalool | 13.74 | 1099 | 0.91 |
| **18** | 6-camphenone | 13.78 | 1101 | 0.25 |
| **19** | p-menth-2-en-1-ol | 14.58 | 1130 | 0.23 |
| **20** | -αterpineol | 15.08 | 1146 | 0.13 |
| **21** | Safranal | 15.85 | 1174 | 0.41 |
| **22** | 4-terpineol | 16.15 | 1184 | 0.23 |
| **23** | Cryptone | 16.36 | 1192 | 0.09 |
| **24** | -αphellandrene epoxide | 17.34 | 1227 | 0.92 |
| **25** | Linalyl acetate | 18.08 | 1253 | 0.19 |
| **26** | Carvacrol | 19.42 | 1301 | 3.79 |
| **27** | α-Terpinyl acetate | 20.8 | 1351 | 0.39 |
| **28** | E-jasmone | 22.11 | 1402 | 0.13 |
| **29** | Z- caryophyllene | 22.99 | 1437 | 0.05 |
| **30** | γ-Elemene | 23.16 | 1444 | 0.11 |
| **31** | γ-Curcumene | 24.25 | 1487 | 0.15 |
| **32** | Germacrene-D | 24.52 | 1498 | 0.05 |
| **33** | Kessane | 25.74 | 1548 | 0.54 |
| **34** | Germacrene-B | 26.45 | 1577 | 0.21 |
| **35** | Caryophyllene oxide | 27.08 | 1604 | 0.1 |
| **36** | Carotol | 27.4 | 1618 | 0.15 |
| **37** | Dodecalactone | 28.89 | 1683 | 0.05 |
| **38** | Hexadecanal | 31.8 | 1814 | 0.08 |
| **39** | Neophytadiene | 32.3 | 1838 | 0.06 |
| **40** | Palmitic acid | 34.77 | 1959 | 1.76 |

a  compound listed in order of elution from HP-5MS column

b  RI: Relative retention indices to C8-C24 n- alkanes on HP-5MS column

Table 2Antioxidant capacity result of essential oil of *Echinophora cinerea Boiss* (DPPH method).

|  |  |  |  |
| --- | --- | --- | --- |
| **Echinophora cinerea** | **concentration** | **RSA (%)** | **IC50** |
| **Essential oil ( μg / ml)** | 2  1  0.5  0.25  0.125  0.0625 | 0.01±86.30  0.03±65.01  0.09±46.10  0.05±44.34  0.08±23.30  0.12±17.49 | 740 |
| **BHT (μg / ml)** | 100  80  60  40  20  10 | 1.05±24.34  1.55±28.46  2.05±47.50  1.97±52.05  1.87±74.21  1.89±77.46 | 50.63 |

Table 3: Mean of MBC and MIC concentration (mg/ml) of the essential oil of E. cinerea Bioss

a Antibiotic control: Vancomycin and Gentamicin

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Microorganisms** | ***E.cinerea*** | | | **Gentamycin** | | **Vancomycin** | | |
|  | MIC | MBC |  | MIC | MBC |  | MIC | MBC |
| ***S. aureus* ATCC 12600** | > 660 | > 660 |  |  |  |  | 0.016 | 0.128 |
| ***S. epidermidis* PTCC 1435** | 165 | 165 |  |  |  |  | 0.016 | 0.128 |
| ***S. agalactiae* PTCC 1768** | 165 | 330 |  |  |  |  | 0.002 | 0.064 |
| ***E. faecalis* ATCC 29219** | 165 | 640 |  |  |  |  | 0.032 | 0.032 |
| ***L. monocytogenes* ATCC 13932** | > 660 | > 660 |  |  |  |  | 0.160 | 0.640 |
| ***E. coli* ATCC 11775** | 41.25 | 660 |  | 0.008 | 0.064 |  |  |  |
| ***S.* *typhi* PTCC 1609** | 20.62 | 330 |  | 0.005 | 0.005 |  |  |  |
| ***S. paratyphi* APTCC 1230** | 20.62 | 330 |  | 0.001 | 0.016 |  |  |  |
| ***S. enterica* PTCC 1709** | 41.25 | 330 |  | 0.002 | 0.002 |  |  |  |
| ***P. aeruginosa* ATCC 27853** | > 660 | > 660 |  | 0.005 | 0.005 |  |  |  |

Tabel 4 The antitumor effect of oil *E. cinerea Bioss*

|  |  |  |  |
| --- | --- | --- | --- |
| **Echinophora cinerea** | **concentration** | **RSA (%)** | **IC50** |
| **Essential oil ( μg / ml)**  **A549 tumor cell line** | 5000  2500  1250  625  312  156  78  39 | |  | | --- | | 61±0.07 | | 45±0.04 | |  | | 30±0.14 | | 24±0.03 | | 24±0.07 | |  | | 19±0.03 | | 18±0.05  17±0.05 | | 291 |