ANALYSIS OF AGARWOOD ESSENTIAL OIL

Table 1 Relative percentage composition of agarwood oils extracted by GC and GC–MS

No.	Compound	RI	Relative percentage composition						
			TG	MA1	LA	KB	JBD	MA2	MA
1	2-Phenylpropanal	1102	–	–	0.7	–	–	–	–
2	Benzaldehyde	1109	1.7	1.7	0.7	–	–	–	–
3	Benzeneacetonitrile	1134	1.4	1.7	–	–	–	–	–
4	4-Phenyl-2-butanone	1241	–	–	0.7	2.7	0.8	1.3	1.2
5	α-Funebrene	1402	–	0.3	–	–	–	–	–
6	α-Gurjunene	1403	–	–	–	–	–	2.8	1.2
7	β-Copaene	1430	–	0.9	–	–	–	–	–
8	α-Guaiene	1433	–	0.4	0.3	0.6	0.1	0.8	–
9	g-Elemene	1434	–	–	1.0	–	–	–	–
10	Aromadendrene	1443	25.9	1.3	9.8	–	–	0.9	–
11	Valencene	1469	–	1.4	–	–	–	–	–
12	g-Gurjunene	1472	–	0.4	–	–	0.2	-	0.4
13	β-Agarofuran	1474	4.3	1.7	2.0	1.0	1.0	1.4	5.0
14	ar-Curcumene	1479	–	0.6	–	0.6	1.2	0.8	0.6
15	α-Muurolene	1496	–	–	–	–	1.2	2.4	–
16	g-Guaiene	1499	–	–	0.7	–	–	–	–
17	β-Dihydroagarofuran	1502	–	2.7	0.5	1.3	1.1	2.9	0.04
18	α-Agarofuran	1547	3.5	1.7	1.4	1.5	1.8	1.5	2.7
19	Elemol	1550	–	–	0.5	1.8	–	–	1.0
20	Dodecanoic acid	1553	–	–	0.5	–	–	–	–
21	g-Vetivenene	1553	–	–	0.4	0.9	–	–	–
22	β-Vetivenene	1554	–	–	0.4	–	–	–	–
23	Spathulenol	1577	–	–	0.4	–	–	1.6	–
24	β-Gurjunene	1600	–	–	1.1	–	–	0.5	–
25	10-Epi-g-eudesmol	1621	9.7	10.9	7.6	7.1	8.1	8.3	20.6
26	g-Eudesmol	1635	–	8.2	–	30.4	14.8	12.9	3.1
27	Agarospirol	1639	9.3	–	24.2	2.1	–	–	–
28	Alloaromadendrene epoxide	1639	–	1.2	–	–	–	1.7	–
29	Guaia-3,9-dien-11-ol	1648	–	4.9	–	–	–	–	–
30	β-Eudesmol	1649	–	4.1	8.4	–	–	–	–
31	α-Eudesmol	1652	17.3	–	–	–	–	–	–
32	Valerianol	1656	19.4	–	14.1	2.3	–	–	1.7
33	β-Costol	1672	2.0	–	–	–	–	–	–
34	α-Bisabolol	1683	–	2.9	–	–	–	1.2	–
35	Selina-3,11-diene-9-one	1687	–	–	1.0	0.4	–	0.3	–
36	Cyperotundone	1695	–	–	1.7	–	–	–	–
37	10-nor-Calamenen	1702	2.8	–	–	–	–	–	–
38	Selina-3,11-dien-14-ol	1735	–	–	1.8	–	7.1	–	–
39	Aristolone	1762	–	–	0.6	–	–	–	–
40	Hexadecanoic acid	1874	–	7.0	5.7	4.5	2.7	–	2.6
41	Thujopsenal	1887	2.1	–	–	–	1.0	–	–
42	Cyclohexadecanolide	1933	–	1.1	–	–	–	–	–
43	Dihydrocolumellarin	1962	2.8	3.0	0.4	1.9	1.8	2.3	2.6

DISCUSSION/CONCLUSION

The quality of the agarwood oils plays an important role as it reflects the price of the oil in the market. High quality agarwood oil is traded extensively. In order to obtain good quality agarwood oil, temperature condition during the extraction is one of the important parameter instead of type and time of extraction. An analysis of chemical compounds of agarwood oil involves of three different temperature conditions such as 40°C, 60°C and 80°C has been carried out in this study. The analytical work involves HS-SPME combined with GC-MS analysis to extract and identify the chemical compounds composition in agarwood oil. The zscore technique was introduced to identify the significant compounds that contribute to the aroma of agarwood oil. The result shows that five compounds were identified and they were aromadendrane, β-agarofuran, α-agarofuran, 10-epi-□-eudesmol and □-Eudesmol. These compounds were found to have similar pattern of plot but different in chemical composition due to the different chemical properties of the oils.

Analysis of chemical compounds of agarwood oil based on headspace-solid phase microextraction combined with gas chromatography mass-spectrometry.