

Composition of the essential oil of flowers of *Chloranthus spicatus* (Thunb.) Makino

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Abstract: The composition of the essential oil of the flowers of *Chloranthus spicatus* (Thunb.) Makino (Chloranthaceae) was investigated using capillary GC-GC/MS, preparative GC and NMR techniques. Forty-seven compounds were identified either by comparing their retention indices and mass spectra with a library of authentic samples established under identical experimental conditions or, by isolating the compounds and deriving their structures by one- and two-dimensional NMR investigations. Thus, four minor components, viz. chloranthalactone A (0.5%), isogermafurenolide (0.7%), eudesma-4(15),7(11),9-trien-12-olide (0.5%), and 7 α -hydroxyeudesm-4-en-6-one (3.3%), were isolated for the first time as constituents of the essential oil of the flowers of *C. spicatus* and their structures established. The major components of the oil include (Z)- β -ocimene (6.3%), allo-aromadendrene (6.2%), sarisane (2-allyl-4,5-methylenedioxyanisole, 4.2%) and selina-4(15),7(11)-diene (6.4%). Copyright © 2006 John Wiley & Sons, Ltd.

Author Keywords: (Z)- β -ocimene; 7 α -hydroxyeudesm-4-en-6-one; Allo-aromadendrene; Chloranthalactone A; *Chloranthus spicatus*; Essential oil; Eudesma-4(15),7(11),9-trien-12-olide; Isogermafurenolide; Sarisane; Selina-4(15),7(11)-diene

Index Keywords: Composition; Gas chromatography; Mass spectrometry; Nuclear magnetic resonance spectroscopy; Allo-aromadendrene; Chloranthalactone; *Chloranthus spicatus*; Eudesmaolide; Hydroxyeudesm; Isogermafurenolide; Sarisane; Selinadiene; Essential oils; 7 α hydroxyeudesm 4 en 6 one; aromadendrene; chloranthalactone a; *Chloranthus spicatus* extract; essential oil; eudesma 4(15),7(11),9 trien 12 olide; isogermafurenolide; natural product; ocimene; plant extract; sarisane; selina 4(15),7(11) diene; unclassified drug; article; capillary gas chromatography; chemical structure; *Chloranthus spicatus*; controlled study; flower; herb; mass spectrometry; nonhuman; nuclear magnetic resonance spectroscopy; quantitative analysis; structure analysis; Chloranthaceae; *Chloranthus spicatus*

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Chemicals/CAS: aromadendrene, 14682-34-9, 489-39-4; ocimene, 13877-91-3

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References:

- Pham, H.H., (1991) An Illustrated Flora of Vietnam, pp. 355-356. , Published by the author: Montreal
- Vo, V.C., (1997) Dictionary of Vietnamese Medicinal Plants, pp. 1052-1053. , Medicine: Ho Chi Minh City
- Kawabata, J., Fukushi, Y., Tahara, S., Mizutani, J., (1985) Agric. Biol. Chem., 49, pp. 1479-1486
- Kawabata, J., Mizutani, J., (1992) Phytochemistry, 31, pp. 1293-1296
- Kawabata, J., Fukushi, E., Mizutani, J., (1993) Phytochemistry, 32, pp. 1347-1349
- Takeda, Y., Yamashita, H., Matsumoto, T., Terao, H., (1993) Phytochemistry, 33, pp. 713-715
- Okamura, H., Nakashima, N., Iwagawa, T., Nakayama, N., Nakatani, M., (1994) Chem. Lett., 8, pp. 1541-1542
- Uchida, M., Koike, Y., Kusano, G., Kondo, Y., Nozoe, S., (1980) Chem. Pharm. Bull., 28, pp. 92-102
- Tahara, S., Fukushi, Y., Kawabata, J., Mizutani, J., (1981) Agric. Biol. Chem., 45, pp. 1511-1512
- Kawabata, J., Tahara, S., Mizutani, J., (1981) Agric. Biol. Chem., 45, pp. 1447-1454
- Kawabata, J., Fukushi, Y., Tahara, S., Mizutani, J., (1984) Agric. Biol. Chem., 48, pp. 713-718
- Kawabata, J., Fukushi, Y., Tahara, S., Mizutani, J., Shizukaol, A., (1990) Phytochemistry, 29, pp. 2332-2334
- Kawabata, J., Fukushi, E., Mizutani, J., (1995) Phytochemistry, 39, pp. 121-126
- Kawabata, J., Fukushi, E., Mizutani, J., (1998) Phytochemistry, 47, pp. 231-236
- Wang, T., Huang, A., Sun, Y., Wu, Z., Liu, M., (1987) Zhiwu Xuebao, 29, pp. 184-188
- Huang, W., Yang, X., (1998) Fenx Huaxue, 26, pp. 1081-1084
- Joulain, D., König, W.A., (1998) The Atlas of Spectral Data of Sesquiterpene Hydrocarbons, , EB-Verlag: Hamburg
- Hochmuth, D.H., König, W.A., Joulain, D., (2003), MassFinder 2.3 Software & Data Bank: Hamburg, www.chemie.uni-hamburg.de/oc/koenig/massfinder.html (9 January 2004)Uchida, M., Kusano, G., Kondo, Y., Nozoe, S., (1978) Hetrocycles, 9, pp. 139-144
- Tsui, W.-Y., Brown, G.D., (1996) Phytochemistry, 43, pp. 819-821
- Kenich, T., Isao, H., Hitoshi, M., (1968) Journal of the Chemical Society C, 5, pp. 569-572
- Friedrich, D., Bohlmann, F., (1988) Tetrahedron, 44, pp. 1369-1392
- Wu, S.-L., Li, W.-S., (1995) J. Chin. Chem. Soc. (Taipei), 42 (3), pp. 555-560
- Bohlmann, F., Dutta, L.N., Knauf, W., (1980) Phytochemistry, 19, pp. 433-436

- Lobitz, G.O., Tamayo-Castillo, G., Merfort, I., (1997) *Phytochemistry*, 46 (1), pp. 161-164
- Ding, H.-Y., Wu, Y.-C., Lin, H.-C., (2000) *J. Chin. Chem. Soc.*, 47, pp. 561-566
- Connolly, J.D., Hill, R.A., (1991) *Dictionary of Terpenoids*, 1. , Chapman and Hall: London

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