Absolute stereostructure of the labdane-type diterpene alcohol from Alpinia tonkinensis Gagnep.

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Abstract: The labdane-type diterpene 15,16-epoxy-8(17),13(16),14-labdatrien-12??-ol (1) was isolated together with 2'-hydroxy-4',6'-dimethoxychalcone and 2,3-dihydro-4',7-di-O-methylkaempferol from the rhizomes of the endemic Vietnamese medicinal plant Alpinia tonkinensis Gagnep. (Zingiberaceae). Although both diastereomers of the furanolabdane alcohol 1 provided by the chiral center at the 12-position have already been reported as semisynthetic intermediates, the absolute configuration at the 12-position, which affects the chemical shifts of the 17-exomethylene protons, remains to be clarified. In this study, the natural furanolabdane 1, which possessed the same ^{1}H- and ^{13}C-NMR spectroscopic data as those of one of the semisynthetic diastereoisomeric pair, was determined to be in the (12S)-form from spectroscopic data and by applying the modified Mosher's method.

Author Keywords: Absolute configuration; Alpinia tonkinensis; Labdane-type diterpenoid; Modified Mosher's method; Zingiberaceae

Index Keywords: 15,16 epoxy 8(17),13(16),14 labdatrien 12xi ol; 2' hydroxy 4',6' dimethoxychalcone; 2,3 dihydro 4',7 di o methylkaempferol; Alpinia tonkinensis extract; diterpene; furanolabdane; plant extract; unclassified drug; Alpinia tonkinensis; article; carbon nuclear magnetic resonance; diastereoisomer; drug isolation; drug structure; medicinal plant; nonhuman; proton nuclear magnetic resonance; rhizome; structure analysis; Viet Nam; Zingiberaceae

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References:

1. Pham, H.H., (1993) An Illustrated Flora of Vietnam, 3, p. 547. , Published by the Author, Montreal, Fascicle 1
2. Nguyen, Q.B., (1994) Vietnam Journal of Biology, 16, pp. 143-145
3. Phan, M.G., Phan, T.S., K??nig, W.A., personal communicationJung, M., Ko, I., Lee, S., (1998) J. Nat. Prod., 61, pp. 1394-1396
4. Willamizar, J., Fuentes, J., Salazar, F., Tropper, E., Alonso, R., (2003) J. Nat. Prod., 66, pp. 1623-1627
5. Bell, R.A., Gravestock, M.B., Taguchi, V.Y., (1975) Can. J. Chem., 53, p. 2869
6. Xu, H.X., Dong, H., Sim, K.Y., (1996) Phytochemistry, 42, pp. 149-151
7. Tomla, C., Kamnainng, P., Ayimele, G.A., Tanifum, E.A., Tsopmo, A., Tane, P., Ayafor, J.F., Connolly, J.D., (2002) Phytochemistry, 60, pp. 197-200
8. Ohtani, I., Kusumi, T., Kashman, Y., Kakisawa, H., (1991) J. Am. Chem. Soc., 113, pp. 4092-4096
9. Itokawa, H., Morita, M., Mihashi, S., (1981) Phytochemistry, 20, pp. 2503-2506
10. Rossi, M.H., Yoshida, M., Maio, J.G.S., (1997) Phytochemistry, 45, pp. 1263-1269