

In the search for plants containing ecdysteroids, we have investigated the East Asian species *Lychnis fulgens* Fisch. from the family *Caryophyllaceae*, which grows in Primor'e, Primor'e, in the north of the Korean peninsula, in north-eastern China, and in Japan (islands of Honshu and Hokkaido). Samples of the flowering plants were collected in Primorskii Krai [Maritime Territory] in the environs of the village of Shkotovo in the valley of the R. Shkotovka in July, 1984.

The whole plants of *L. fulgens* (1.8 kg) were extracted repeatedly with methanol. The methanolic extract was evaporated to a volume of 150 ml and was diluted with an equal amount of water. The hydrophobic compounds were eliminated with hexane. The purified aqueous methanolic fraction was extracted with butanol. After the solvent had been distilled off, 7.6 g of combined extractive substances was obtained. They were chromatographed on a column of SiO_2 with elution by the chloroform-methanol-water (65:35:3) system. Subsequent rechromatography (chloroform-methanol (9:1)) led to the isolation of 42 mg (0.0023% on the weight of the air-dry raw material) of α -ecdysone [1, 2], $\text{C}_{27}\text{H}_{44}\text{O}_6$, mp 234-236°C (from ethyl acetate-ethanol), $[\alpha]_D^{20} +62.1 \pm 2^\circ$ (s 0.97; methanol), $\nu_{\text{max}}^{\text{KBr}} (\text{cm}^{-1})$: 3300-3400, 1650. Mass spectrum, m/z: 446 ($\text{M}^+ - \text{H}_2\text{O}$), 431, 428, 413, 410, 348, 330, 300, 9, and 81. PMR spectrum ($\text{C}_5\text{D}_5\text{N}$; 100 MHz; δ , ppm: 0 - HMDS): 0.60 (18- CH_3 , s); 0.92 (19- CH_3 , s); 1.08 (21- CH_3 , d), 1.21 (26- and 27- CH_3 , s); 5.96 (H, broadened singlet).

Further elution of the column yielded 76 mg (0.0041%) of ecdysterone [3, 4] with mp 235-237°C (from ethyl acetate-methanol), $[\alpha]_D^{20} +63.2 \pm 2$ (s 1.15; methanol), $\nu_{\text{max}}^{\text{KBr}} (\text{cm}^{-1})$: 3360-3500, 1660. Mass spectrum: 462 ($\text{M}^+ - \text{H}_2\text{O}$), 444, 426, 411, 408, 363, 345, 327, 300, 99, and 81. The facts given, and also a direct comparison with an authentic sample by TLC, confirmed the correctness of the identification.

On continuing the elution of the column with the same solvent system we obtained 51 mg (0.0028%) of polygodin B [5], $\text{C}_{27}\text{H}_{44}\text{O}_8$, mp 257-258°C (from ethyl acetate-methanol), $[\alpha]_D^{20} +81.4 \pm 2^\circ$ (s 1.04; methanol). $\nu_{\text{max}}^{\text{KBr}} (\text{cm}^{-1})$: 3350-3450, 1640, 1687. Mass spectrum: 478 ($\text{M}^+ - \text{H}_2\text{O}$), 460, 442, 424, 409, 379, 361, 343, 326, 316, 299, 283, 281, 99 and 81. PMR spectrum: 1.00 (18- CH_3 , s); 1.05 (19- CH_3 , s); 1.23 (26- and 27- CH_3 , s); 6.05 (H, br.s).

The study of the more polar phytoecdysteroids is continuing.

LITERATURE CITED

1. A. Butenandt and P. Karlson, *Z. Naturforsch.*, **96**, 389 (1954).
2. P. Karlson, H. Hoffmeister, W. Hoppe, and R. Huber, *Ann. Chem.*, **662**, 1 (1963).
3. H. Hoffmeister and H. F. Grutzmacher, *Tetrahedron Lett.*, 4017 (1966).
4. M. N. Galbraith and D. H. S. Horn, *Aust. J. Chem.*, **22**, 1045 (1969).
5. J. Jizba, V. Herout, and F. Sorm, *Tetrahedron Lett.*, 5139 (1967).

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