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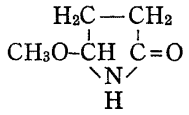
Pterolactam, a New Compound isolated from Bracken

Recently Hikino, *et al.*[1] and Yoshihira, *et al.*[2] reported new glycosides and their aglycone, 1-indanone derivatives, isolated from bracken respectively. Interested in the carcinogenicity of bracken,[3,4,5] we intended to isolate the carcinogen contained in bracken. During this study, a five-membered lactam has been isolated and named pterolactam.

The charcoal (Norit A) adsorption fraction of the methanol extract of the bracken (*Pteridium aquilinum* KUHN var. *latiusculum* UNDERWOOD) was subjected to the alumina chromatography. The relatively early eluted fraction with methyl acetate gave the pterolactam, the colorless leaflets, mp 56—57° (recrystallized from petroleum ether), $[\alpha]_D^{25}$ +2.0° ($CHCl_3$). *Anal.* Calcd. for $C_5H_9O_2N$ (m.w. 115): C 52.17; H 7.83; N 12.17. Found: C 52.04; H 7.87; N 12.13. The infrared (IR) spectrum of pterolactam was indicated in Fig. 1. This spectrum has the clear and large absorption at 1700 cm^{-1}, and very resembles to the IR spectrum of 2-pyrrolidone (γ-butyrolactam). Data of nuclear magnetic resonance spectrum ($CDCl_3$): τ 6.67 (OCH_3, 3H, singlet), 7.32—8.19 (-CH_2-, 4H, multiplet), 5.19 (-C–H, 1H, multiplet), 2.33 (NH, 1H, broad; this disappeared when D_2O was added). From these data, the constitution of pterolactam is assumed to be 5-methoxy-2-pyrrolidone.



Pterolactam

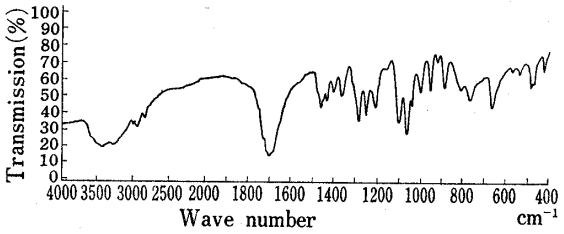


Fig. 1. Infrared Absorption Spectrum of Pterolactam (in KBr wafer)

Studies on biological properties of this compound are in progress in our laboratory.

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