The Synthesis of dl-4(-3-Furyl)-1-methyl Quinolizidine; Demethyl Analogue of Deoxynupharidine

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In 1956, structure (I) was assigned by Kotake, Kusumoto and Ohara[1] to deoxynupharidine; an alkaloid isolated from the roots of *Nuphar japonica* DC. A synthesis of *dl*-4(-3-furyl)-1-methyl quinolizidine is now reported which establishes the synthetic routes to the *dl*-deoxynupharidine*. The stages involved in the synthesis are as follows:

Compound II[2], b. p. 133°C/10^{-2} mmHg; III, (62%) b. p. 130°C/10^{-2} mmHg, I. R. bands at 1645 (amide), 1735 cm^{-1} (ester). *Anal.* Found: C, 64.78; H, 8.89; N, 5.80. Calcd. for $C_{13}H_{21}O_3N$: C, 65.24; H, 8.85; N, 5.85%; IV, (95%) m. p. 102~106°C. *Anal.* Found: C, 53.69; H, 9.13; N, 6.20. Calcd. for $C_{10}H_{19}O_2N$-HCl: C, 54.17; H, 9.09; N, 6.33%; V, (48%) b.p. 154°C/10^{-3} mmHg, I.R. bands at 875, 1505, 3110 (furan), 1573 (conjugated furan), 1625 (amide), 1735 cm^{-1} (ester). *Anal.* Found: C, 65.94; H, 8.24; N, 4.51. Calcd. for $C_{17}H_{25}O_4N$: C, 66.42; H, 8.20; N, 4.56%; VI[3], (56%) b. p. 81~84°C/10^{-3} mmHg, I. R. bands at 875, 1505, 3110 (furan), 1588 (conjugated furan), 1640 cm^{-1} (double bond); VII, (50%) b. p. 87~89°C/10^{-2} mmHg. Perchlorate, m. p. 193~194°C. *Anal.* Found: C, 52.56; H, 6.82; N, 4.34. Calcd. for $C_{14}H_{21}ON \cdot HClO_4$: C, 52.57; H, 6.93; N, 4.38%. Picrate, m. p. 172~174°C. *Anal.* Found: C, 53.30; H, 5.40; N, 12.79. Calcd. for $C_{20}H_{24}O_8N_4$: C, 53.57; H, 5.39; N, 12.50%.

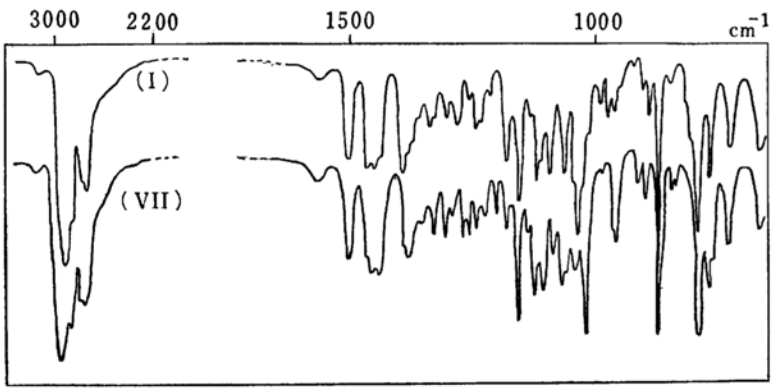

Fig. 1.

The I. R. spectra of compound VII are similar to that of the deoxynupharidine as indicated in Fig. 1.

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* The synthesis of *dl*-deoxynupharidine was reported elsewhere.

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