

SHORT COMMUNICATIONS

A New Alkaloid from *Aconitum sachalinense* Fr. Schmidt

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(Received July 17, 1969)

It has been known that the roots of *Aconitum sachalinense* Fr. Schmidt, which is found throughout southern Sakhalin, contain two alkaloids, jesaconitine $C_{35}H_{49}O_{12}N$ (I) and kobusine $C_{20}H_{27}O_2N$ (II).¹⁾

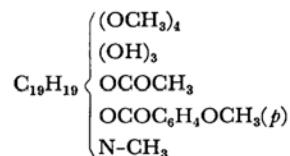
This paper will report on the isolation of a further new toxic alkaloid, III, belonging to the group having a aconitine-type skeleton, from the same plant and from *Aconitum sachalinense* Fr. Schmidt var.*¹

The III alkaloid was crystallized as its perchlorate (IV) mp 254–256°C (dec.), $[\alpha]_D^{25} -12^\circ$ (Found: C, 52.49; H, 6.59%. Calcd for $C_{34}H_{47}O_{12}N \cdot HClO_4$: C, 52.26; H, 6.34%, from the mother liquor after the isolation of I and II. The hydrolysis of the amorphous base III with methanolic potassium hydroxide gave anisic acid, acetic acid (characterized as the silver salt), and an amorphous alkamine, V. V gave the crystalline hydrochloride (VI) (mp 174–179°C) and also the crystalline pentaacetyl derivative (VII), mp 240.5–241.5°C (Found: C, 58.62, 58.64; H, 7.01, 7.02%. Calcd for $C_{34}H_{49}O_{14}N$: C, 58.69; H, 7.09%), on acetylation with acetyl chloride.

From the above experiments, eight out of twelve oxygen atoms in the new alkaloid, III, have been shown to be present in the form of an acetyl group, an anisoyl group, and three free hydroxyl groups. In general, alkaloids with toxic aconitine-type

skeletons have several methoxyl groups. The presence of four methoxyl groups in the V alkamine has been confirmed by the micro-Zeisel determination. The permanganate oxidation of anisoyltetraacetylalkamine (VIII) (mp 198–202°C), obtained by the acetylation of III with acetyl chloride, gave formaldehyde (characterized as the dimedone derivative), as in mesaconitine (IX)²⁾ or hypaconitine (X)³⁾. This suggests the presence of an *N*-methyl group in III.

The above evidence shows that the formula of III may be extended as follows:



As with other alkaloids in the aconitine group, the pyrolytic reaction of the new base, III, gave a pyro-base upon the elimination of the acetic acid. Although the molecular formula and the functional groups of the V alkamine corresponded to those of mesaconine, the alkamine from mesaconitine IX, VII and pentaacetylmesaconine were found to be different by comparisons of their IR spectra and melting points. It is very likely the new alkaloid, III, is an epimer with regard to a secondary hydroxyl or a methoxyl group of mesaconine.

The structural study of the new alkaloid, III, is now in progress.

1) H. Suginome and S. Imato, *J. Fac. Sci., Hokkaido Univ. Ser. III Chem.*, **4**, 35 (1950).

*¹ This species is distributed over northern Hokkaido. It contains jesaconitine, kobusine, etc., as does the original species.

2) K. Tamura, *Ann.*, **533**, 183 (1938).

3) R. Majima and K. Tamura, *ibid.*, **526**, 116 (1936).