

groups) forming an equatorial ring around the linear uranyl group.

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#### CHEMICAL STUDIES ON ADIANTUM CAUDATUM

*Adiantum caudatum* (Fam: Polypodiaceae) has been used in indigenous system of medicine for the treatment of skin diseases, diabetes, cough and fever. Chemical investigations on various species of this genus have been carried out<sup>1-7</sup> but little work on *A. caudatum*<sup>8</sup> is on record. The present note deals with the isolation and characterization of some triterpenes from its petroleum ether extract.

The petroleum ether extract of the air dried drug in moderately course powder was chromatographed on Brockmann alumina and eluted with the solvent mixtures of increasing polarities. From the petrol eluates a homogeneous triterpene hydrocarbon, fernene m.p. 170-72° yield—0.001% was isolated; i.r. (KBr) typical of hydrocarbons without showing any functionality; n.m.r. (CDCl<sub>3</sub>) showed an olifenic character of the compound ( $\delta$  5.35) and the methyl groups attached to the positions 4 $\beta$ , 4 $\alpha$ , 10, 13, 14, 17 appeared at  $\delta$  0.81,  $\delta$  0.83,  $\delta$  1.2,  $\delta$  1.01,  $\delta$  0.96 and  $\delta$  0.75 respectively. The two methyls attached to C-22 could not be located due to overlapping of peaks.

The petrol-benzene (10:2) elutes on fractional crystallisation from a mixture of methanol-benzene (2:1) gave two triterpenes A and B. Triterpene A, m.p. 218°, yield—0.03% i.r. (KBr) showed only the carbonyl absorption at 1710 cm<sup>-1</sup>; mass spectrometrically determined molecular weight M<sup>+</sup> is at m/e 412 with prominent fragments at m/e 397, 369, 206, 191 (100%), 149, 123 and 95 which are in excellent agreement with the fragmentation pattern of adiantone. This is further confirmed from its n.m.r. (CDCl<sub>3</sub>) which gave singlets due to methyls attached to 4 $\beta$ , 4 $\alpha$ , 10, 8, 14, 18 and 22 at  $\delta$  0.81,  $\delta$  0.80,  $\delta$  0.77,  $\delta$  0.94,  $\delta$  0.92,  $\delta$  0.67 and  $\delta$  2.15 respectively. Triterpene B is also a ketogenic compound obtained in very low yield—0.001%, m.p. 236-37°; i.r. (Nujol) gave carbonyl absorption at 1710 cm<sup>-1</sup>. Its i.r. and n.m.r. were identical with those of the triterpene A with only the difference in m.p. which suggests its possible identity with iso-adiantone.

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