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POLLINASTANOL IN THE SEEDS OF *CORDYLINE INDIVISA*

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Our previous study on the seed sterols of *Cordyline indivisa* Kunth, an ornamental plant, showed that the 4-desmethylsterol fraction, separated from the unsaponifiable matter of the seed oil by Si gel PLC, contained at least ten components; nine of which were tentatively identified by GLC and GC–MS [1]. Our continued study has now lead to the tentative identification of the remaining component as pollinastanol (14α-methyl-9β,19-cyclo-5α-cholestan-3β-ol). The fraction containing the unidentified steryl acetate was recovered from the least polar faint zone on the $AgNO_3$–Si gel TLC of the acetylated 4-desmethylsterol fraction [1]. GC–MS (2% OV-17, ionizing voltage 70 eV; $>m/e$ 150) of the steryl acetate showed M^+ at m/e 442 ($C_{30}H_{50}O_2$, relative intensity 12%) and other ions at m/e 427 (M^+-Me, 12%), 382 (M^+-AcOH, 100%), 367 (M^+-AcOH—Me, 97%), 329 (M^+-SC[C_8H_{17}], 12%), 288 (M^+-ring A [$C_9H_{14}O_2$], 13%), 273 (M^+-SC—42-CH_2, 10%), 269 (m/e 329-AcOH, 72%), 213 (m/e 273-AcOH, 9%) and 175 (m/e 288-SC, 70%). The R_t (cholesteryl acetate = 1.00) of the steryl acetate on GLC (2 m × 3 mm glass column) was 1.19 on 3% OV-17 (column temp. 273°), 1.19 on 2% Dexil-300 (273°), 1.25 on 2% OV-210 (203°) and 1.21 on 10% OV-225 (255°), respectively. The MS and the R_t on GLC were identical with those of authentic pollinastanyl acetate.

Pollinastanol was first isolated from mixed pollens of unknown origin and the unusual 4-desmethylcycloartanol structure was proposed [2]. This compound was later re-isolated from the pollens of Compositae plants, *Hypochoeris radicata* and *Taraxacum dens leonis* [3], from the leaves and rhizomes of fern *Polypodium vulgare*, and from the roots of *Smilax medica* (Smilacaceae) [4]. The correctness of the proposed structure of pollinastanol was verified by X-ray examination [5]. Incorporation of tritiated pollinastanol into cholesterol by the leaves of *Nicotiana tabacum* was demonstrated [6] and it was suggested that the presence of pollinastanol may be explained by its intermediary role in the conversion of cycloartenol to cholesterol [4, 7, 8]. Since considerable amounts of the following sterols were found in the seed sterol fraction of *C. indivisa* [1]: cycloartenol, cycloartanol, 31-norcycloartenol, cholesterol and cholest-7-enol; pollinastanol now found may also be considered to participate in the biogenetic linkage between cycloartenol to desmethylsterols in this plant.

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REFERENCES

1. Itoh, T., Tamura, T., Mitsuhashi, T. and Matsumoto, T. (1977) *Phytochemistry* **16**, 140.
2. Hügel, M. F., Barbier, M. and Lederer, E. (1964) *Bull. Soc. Chim. Fr.* 2012.
3. Devys, M. and Barbier, M. (1967) *Bull. Soc. Chim. Biol.* **49**, 865.
4. Devys, M., Alcaide, A., Pinte, F. and Barbier, M. (1969) *Compt. Rend.* **269**, 2033.
5. Ducruix, A., Pascard-Billy, C., Devys, M., Barbier, M. and Lederer, E. (1973) *Chem. Commun.* 929.
6. Devys, M., Alcaide, A. and Barbier, M. (1969) *Phytochemistry* **8**, 1441.
7. Devys, M. and Barbier, M. (1967) *Compt. Rend.* **264**, 504.
8. Barbier, M. (1970) *Progr. Phytochemistry* **2**, 1.