Phytochemistry, Vol. 20, No. 4, p. 857, 1981.
Printed in Great Britain.

0031-9422/81/040857-01 $02.00/0

STIGMASTANOL IN THE SEEDS OF *TRICHOSANTHES CUCUMEROIDE*

TAKASHI IIDA,* TOSHITAKE TAMURA† and TARO MATSUMOTO†

* College of Engineering, Nihon University, Koriyama, Fukushima-ken, 963 Japan; † College of Science and Technology, Nihon University, Chiyoda-ku, Tokyo, 101 Japan

(*Received* 19 *July* 1980)

Key Word Index—*Trichosanthes cucumeroide*; Cucurbitaceae: stigmastanol; seeds.

Previous workers have demonstrated that Tracheophyte families contain Δ^5-, Δ^7-, and $\Delta^{5,7}$-sterols as 4-desmethylsterol components [1]. We now report the isolation and identification of a saturated sterol, stigmastanol ([24*R*]-24-ethyl-5α-cholestan-3β-ol), from the seed oils of *Trichosanthes cucumeroide* M. (Cucurbitaceae). This sterol is believed to be identical with an unidentified sterol from *Trichosanthes kirilowii* M. seed oils reported by Jeong *et al.* [2].

Stigmastanyl acetate was isolated from the least polar faint zone on the $AgNO_3$-Si gel TLC of the acetylated 4-desmethylsterol fraction which was separated from the unsaponifiable matter of the seed oils [2]. The R_t (cholesteryl acetate = 1.00) of the acetate on GLC (OV-1 glass capillary column, 0.28ϕ × 35 m; temp. 265°) was 1.59. Hydrolysis of the acetate gave free sterol (mp 139–141.5°). The MS (probe, 70 eV) showed M^+ at *m/e* 416 ($C_{29}H_{52}O$, rel. int. 77), base peak at *m/e* 43 and other peaks at *m/e* 401 (M^+-Me, 25), 398 (M^+-H_2O, 10), 383 (M^+-Me-H_2O, 3), 344 (M^+-ring A [C_4H_8O], 5), 275 (M^+-SC [$C_{10}H_{21}$], 7), 260 (275-Me, 4), 257 (275-H_2O, 12), 248 (M^+-SC-27, 18), 233 (275-42, 77), and 215 (233-H_2O, 67). The ^{1}H NMR spectrum (90 MHz, $CDCl_3$, TMS) exhibited signals at δ 0.65 (3H, *s*, C-18), 0.80 (3H, *s*, C-19), 0.91 (3H, *d*, J = 6.3 Hz, C-21), 0.84 (3H, *d*, J = 6.3 Hz, C-26), 0.82 (3H, *d*, J = 6.3 Hz, C-27), 0.85 (3H, *t*, J = 6.8 Hz, C-29), and 3.67 (1 H, *m*, $W_{1/2}$ = 22, *C*-3α), but no olefinic proton. These data were in agreement with those of authentic stigmastanol prepared from stigmasterol. The *R*-configuration at C-24 was confirmed by the ^{1}H NMR lanthanide induced shift experiments for the side chain methyls [3] and by the following ^{13}C NMR data (22.50 MHz, $CDCl_3$, TMS) [4]: δ 11.9 (C-18), 12.0 (C-29), 12.2 (C-19), 18.7 (C-21), 19.0 (C-27), 19.6 (C-26), 23.1 (C-28), 26.2 (C-23), 29.3, (C-25), 34.0 (C-22), 36.0 (C-20), and 45.9 (C-24).

The presence of stigmastanol in the plant kingdom has previously been reported in several species of *Triticum* spp. (Grammineae) [5], *Sphagnum* spp. (Sphagnaceae) [6], and *Physarum polycephalum* (Myxomycetes) [7].

Acknowledgements—We are grateful to Professor S. Seto, Nihon University, for measuring the MS. The plants were collected on Hachisuka (Japan) by Dr. Y. Koyama, Food Research Institute, Aichi Prefectural Government.

REFERENCES

1. Nes, W. R. Krevitz, K., Joseph, J., Nes, W. D., Harris, B., Gibbons, G. F. and Patterson, G. W. (1977) *Lipids* **12**, 511.
2. Jeong, T. M., Yang, M. S. and Matsumoto T. (1977) *J. Korean Chem. Soc.* **21**, 193.
3. Iida, T., Tamura, T. and Matsumoto, T. (1980) *J. Lipid Res.* **21**, 326.
4. Wright, J. L. C., McInnes, A. G., Shimizu, S., Smith, D. G., Walter, J. A., Idler, D. and Khalil, W. (1978) *Can. J. Chem.* **56**, 1898.
5. Berrie, A. M. M. and Knights, B. A. (1972) *Phytochemistry* **11**, 2363.
6. Ives, D. A. J. and O'Neill, A. N. (1958) *Can. J. Chem.* **36**, 434.
7. Lenfant, M., Lecompte, M. F. and Farrugia, G. (1970) *Phytochemistry* **9**, 2529.