INVESTIGATION OF THE CONSTITUENTS AND ANTITUMOR ACTIVITY OF *SPARTINA CYNOSUROIDES*

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In our continuing (1-3) search for antitumor agents from plants that grow in the salt marshes of the Southeastern United States, we report here the isolation of β-sitosterol, β-sitosteryl-D-glucoside, vanillin, and tricin from the giant cord-grass, *Spartina cynosuroides*. Tricin is reported by Lee *et al.* (4) to yield an activity of 133 and 174% t/c at 6 mg/kg and 12.5 mg/kg in the *in vivo* P-388 screen. Since the other compounds were inactive, the possibility exists that tricin is responsible for the antitumor activity of the extract of *S. cynosuroides*.

EXPERIMENTAL

EXTRACTION OF SPARTINA CYNOSUROIDES TOPS.—The dry ground tops of *S. cynosuroides* (9 kg), which were collected from Cowland Point, Bay St. Louis, Mississippi during the summers of 1973 and 1974, were extracted with 95% ethanol. Using standard solvent—solvent and chromatographic procedures (1-3), 110 mg of β-sitosterol, 105 mg of vanillin, 151 mg of β-sitosteryl-D-glucoside, and 45 mg of tricin were obtained.

All compounds were identified by standard spectral means, by the formation of derivatives, and by comparison with an authentic sample. The acetate derivatives of tricin and β-isoteryl-D-glucoside also compared with authentic samples. Full details of the isolation and identification of the compounds are available on request to the senior author.

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LITERATURE CITED

1. D. Howard Miles, Jr., J. Bhattacharyya, Naresh V. Mody, Jerry L. Atwood, Susan Black, and Paul A. Hedin, *J. Am. Chem.*, **99**, 618 (1977).
2. J. Bhattancharyya and D.H. Miles, *Tetrahedron Lett.*, 2749 (1977).
3. D. Howard Miles, Shirley Randle, Riz Shakir, and Jerry L. Atwood, *J. Org. Chem.*, **13**, 2813 (1981).
4. K.H. Lee, K. Tagahara, H. Suzuki, R.Y. Wu, M. Haruna, I.H. Hall, H.C. Huang, K. Ito, T. Iida, and J.S. Lai, *J. Nat. Prod.*, **44**, 530 (1981).

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