

genic and caffeic acids were identified in the flowers of three plants together with small quantities of another aroylglycoside of cyanidin (4) and a kaempferol glycoside (UV, PC TLC). The anthocyanin distribution in the plants was as follows;

*Akebia quinata*: 2, 3, 4.

*A. trifoliata*: 1, chrysanthemin, 3 (trace). 4.

*Stauntonia hexaphylla*: 1, chrysanthemin.

#### EXPERIMENTAL

Anthocyanin extract of flowers was separated into several bands by PC in BuOH-HCl-H<sub>2</sub>O (7:2:5). *R<sub>f</sub>* values were 0.27 chrysanthemin, 0.37 (2), 0.55 (1) and 0.77 (3). Each band was

further purified by PC in HOAc-HCl-H<sub>2</sub>O (3:1:8) (*R<sub>f</sub>* values were 0.37, 0.77 0.65 and 0.70, respectively). The four pigments separated were then examined by standard procedures [4,5].

#### REFERENCES

1. Bate-Smith, E. C. (1962) *J. Linn. Soc. London (Botany)* **58**, 95.
2. Ishikura, N. (1975) *Bot. Mag. Tokyo* **88**, 41.
3. Harborne, J. B. (1964) *Phytochemistry* **3**, 151.
4. Ishikura, N. (1971) *Bot. Mag. Tokyo* **84**, 1.
5. Ishikura, N. (1975) *Phytochemistry* **14**, 743.

*Phytochemistry*, 1976, Vol. 15, p. 443. Pergamon Press. Printed in England.

### (+)-EPICATECHIN FROM PALMAE

FRANCISCO MARLETTI,\* FRANCO DELLE MONACHE and G. B. MARINI-BETTOLO

Centro Chimica dei Recettori, C.N.R., Università Cattolica del S. Cuore, Via Pineta Sacchetti 644, 00168 Roma, Italia

and

IVAN LEONCIO D'ALBUQUERQUE

Instituto de Antibioticos, Universidade Federal de Pernambuco, 50.000 Recife, Brasil

(Received 10 April 1975)

**Key Word Index**—*Desmoncus polycanthus*; Palmae; (+)-epicatechin, (+)-catechin, (+)-afzelechin.

**Plant:** *Desmoncus polycanthus*, Palmae, Sub-family Ceroxyloideae, collected in the State of Pernambuco (North East Brasil). Local name, Titara. A voucher sample is deposited in the Herbarium of the Institute of Antibiotics UFePe, Recife (Brasil). **Previous work.** The catechins of the Palmae were investigated by us on sister species. On this occasion we have demonstrated the occurrence in nature of (+)-epicatechin for the first time, and also of proanthocyanidins derived from the latter [1,2].

**Present work.** The MeOH extract of powdered root barks of *Desmoncus polyacanthus* was concentrated in vacuum under 15°C and extracted with EtOAc. Removal of the solvent gave a residue which was chromatographed on cellulose. Elution with H<sub>2</sub>O led to the isolation

and identification of three catechins: (+)-catechin, (+)-epicatechin and (+)-afzelechin (mmp,  $[\alpha]_D$ , NMR). Identification was confirmed by preparation of acetyl and methyl derivatives. (+)-Catechin and (+)-afzelechin are widely distributed in plants, whereas (+)-epicatechin has been found so far only in Palmae. The presence of this particular catechin may be of taxonomic value in identifying members of the family. In other Palmae, (+)-epicatechin was found in drupes, leaves and seeds, but no other part were investigated.

#### REFERENCES

1. Delle Monache, F., Ferrari, F. and Marini-Bettolo, G. B. (1971) *Gazzetta* **101**, 387.
2. Delle Monache, F., Ferrari, F., Poce-Tucci, A. and Marini-Bettolo, G. B. (1972) *Phytochemistry* **11**, 2333.

\* Fellow OPAS/OMS.