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## NEW CONSTITUENTS OF *PRUNUS AFRICANA* BARK EXTRACT

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The  $\text{CHCl}_3$  extracts obtained from the bark of *Prunus africana* (Hook.f.) Kalkm (Rosaceae) synonym *Pygeum africanum* (Hook) have been patented under various trade names and used for their activity on benign prostatic hypertrophy (1). The present research work was undertaken in order to isolate systematically all constituents from the extract, which will be then screened individually for biological activity.

In addition to substances already isolated by others [*n*-docosanol (0.39% with respect to the crude extract), *n*-tetracosanol (0.48%), fatty acids (62.3%), sitosterol (10.7%), sitostenone (2.0%), and oleanolic acid (0.66%)] (2,3), we have found the following new constituents: friedelin (1.39%), ursolic acid (2.89%), maslinic acid (trace), 2  $\alpha$ -hydroxyursolic acid (0.50%), epimaslinic acid (0.82%), and an acid (0.87%) that appears to be a diastereomer of 2  $\alpha$ -hydroxyursolic acid.

The low content of *n*-docosanol and the presence of large amounts of sterols and triterpenes in the extract stimulate new pharmacological research to establish definitely the substances responsible for the activity of the crude extract, which has been ascribed previously to sitosterol and its glucoside (2) and to *n*-docosanol (4).

### EXPERIMENTAL

GENERAL EXPERIMENTAL PROCEDURES.—Glc analyses were carried out with a C. Erba Fractovap 2300 gas chromatograph; the mass spectra were obtained by gc/ms analyses using a VG Micromass 7070 EQ mass spectrometer; the ir spectra were recorded with a Perkin-Elmer 197 spectrophotometer.

MATERIAL.—A sample of *P. africana* bark extract ("Pyg/12," a commercial  $\text{CHCl}_3$  extract from Linnea Phytochemical S.A. Riazzino, Locarno, Switzerland), kindly furnished by Laboratori Baldacci S.p.A. of Pisa, Italy, was used.

The isolation of the various substances was made by standard methods before and after saponification of the crude extract. Identifications were made by comparison of gc retention times, ir and ms spectra with those of authentic samples. The acid constituents were identified as their acetates-methyl esters. Epimaslinic acid and the diastereomer of 2 $\alpha$ -hydroxyursolic acid were identified by comparison of gc retention times (5), and by gc-ms of their acetates-methyl esters: these mass spectra were practically superimposable with those of the same derivatives of maslinic and 2 $\alpha$ -hydroxyursolic acid, respectively.

Full details of the isolation and identification are available on request to the senior author.

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