DIHYDROCOUMARIN AND CERTAIN OTHER COUMARINS FROM *PRUNUS MAHALEB* SEEDS

MANSOUR S. AL-SAID and MOHAMED S. HIFNAWY

Department of Pharmacognosy, College of Pharmacy, King Saud University, P.O. Box 2457, Riyadh-11451, Saudi Arabia

In a previous communication (1), the preliminary phytochemical and pharmacological screening together with the macroscopical and microscopical characters of the seeds of *Prunus mahaleb* L. (Rosaceae) were reported. In this article, we present the isolation and identification of dihydrocoumarin, a compound of rare occurrence in natural sources (2,3,4), together with coumarin, herniarin, herniarin glycoside, and many free sugars. Herniarin and its glucoside, however, were previously isolated from the same source (5).

The sedative and vasodilatory effect (1) as well as its folklore use in Arabia for scenting purposes and preservation could be attributed to its coumarin content (6).

EXPERIMENTAL

PLANT MATERIAL.—The seeds of *P. mahaleb* used in this investigation were obtained from the local market in Riyadh. Their identity was confirmed through the Research Centre for Medicinal, Aromatic and Poisonous Plants, College of Pharmacy, King Saud University.

EXTRACTION AND ISOLATION.—The crushed seeds (750 g) were extracted by refluxing with H_2O for about 3 h. The H_2O extract was salted out, by saturating with NaCl, and completely extracted with $CHCl_3$. The organic solvent was removed under reduced pressure, and the residue was taken up in Et_2O. Column chromatography on silica gel using a mixture of n-C_6H_{14}/Et_2O gave, in order of elution, dihydrocoumarin (traces), coumarin (150 mg), and herniarin (924 mg). Identification was based on standard spectroscopic methods and comparison with the reported data (4,7). Dihydrocoumarin was further confirmed by tlc, glc, gc/ms, and ^1H nmr, as well as by comparison with an authentic sample.

Another 500 g of crushed seeds was defatted with petroleum ether (bp 40-60°) and then extracted with EtOH (Soxhlet). The EtOH extract was concentrated, and excess Et_2O was added whereby a voluminous white precipitate was developed. The Et_2O-soluble portion showed the same tlc pattern as the Et_2O soluble fraction from the H_2O extract. The Et_2O-insoluble portion was fractionated on a silica gel column using $CHCl_3$-HOAc-H_2O (50:45:5) for elution. A trace compound (Rf=0.45, same solvent system) expected to be a glycoside was eluted; its hydrolytic product revealed herniarin to be the aglycone; glucose was detected in the hydrolysate of this fraction. Further fractions were found to contain sucrose, glucose, fructose, and mannose. Identification of the sugars was based on tlc analysis and glc of its trimethylsilyl derivatives against authentic samples.

Full details of the isolation and identification of the compounds are available on request to the authors.

ACKNOWLEDGMENTS

The authors wish to thank the staff of the Mass Spectrometry Lab., School of Pharmacy and Pharmacal Sciences, Purdue University, West Lafayette, Indiana, for gc/ms analysis.

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Received 3 December 1985