

COMPONENTS OF A WATER-SOLUBLE POLYPHENOL  
PREPARATION FROM PROPOLIS

A. I. Tikhonov, L. I. Dranik,  
and V. I. Litvinenko

UDC (547.56:547.52):633.8

The study of the chemical nature of the biologically active substances of propolis is important for standardizing crude propolis and preparations of it. It has been established that a number of natural substances are always present in propolis regardless of the region in which the bees live and the breed of bee [1, 2]. We give the results of an investigation of some phenolic compounds isolated from a water-soluble propolis preparation proposed previously [3]. The water-soluble polyphenolic propolis preparation was separated by chromatography on columns of polyamide sorbent using gradient elution with mixture of ethanol and water. Five phenolic compounds were isolated in the individual state.

trans-Caffeic acid,  $C_9H_8O_4$ , yellow crystals, mp 195-197°C,  $\lambda_{\max}^{\text{ethanol}}$  245 (299), 326 nm,  $\lambda_{\max}^{\text{KOH}}$  251, 351 nm,  $R_f^{2\% \text{ CH}_3\text{COOH}}$  0.29.

trans-p-Coumaric acid,  $C_9H_8O_3$ , colorless crystals, mp 209-213°C,  $\lambda_{\max}^{\text{ethanol}}$  230, 311 nm,  $\lambda_{\max}^{\text{KOH}}$  339 nm,  $R_f^{2\% \text{ CH}_3\text{COOH}}$  0.49.

trans-Ferulic acid,  $C_{10}H_{10}O_4$ , yellow crystals, mp 165-168°C,  $\lambda_{\max}^{\text{ethanol}}$  235 (295), 319 nm,  $\lambda_{\max}^{\text{KOH}}$  305, 346 nm,  $R_f^{2\% \text{ CH}_3\text{COOH}}$  0.42.

Esculetin,  $C_9H_6O_4$ , yellow needles, mp 265-270°C,  $\lambda_{\max}^{\text{ethanol}}$  230, 257, 300, 350 nm,  $\lambda_{\max}^{\text{KOH}}$  240, 385 nm,  $R_f^{2\% \text{ CH}_3\text{COOH}}$  0.30.

Scopoletin,  $C_{10}H_8O_4$ , colorless crystals, mp 203-205°C,  $\lambda_{\max}^{\text{ethanol}}$  231, 297, 342 nm,  $\lambda_{\max}^{\text{KOH}}$  240, 394 nm,  $R_f^{2\% \text{ CH}_3\text{COOH}}$  0.34.

PC analysis of samples of propolis from various zones of the European part of the USSR showed that esculetin, scopoletin, and caffeic, p-coumaric, and ferulic acids are constant components, although their relative amounts differ.

LITERATURE CITED

1. T. V. Vakhonina, L. G. Breeva, R. N. Bodrov, et al., Trudy NII Pchelovodstva, No. 7, 295 (1972).
2. S. A. Popravko, A. I. Gurevich, and M. N. Kolosov, Khim. Prirodn. Soedin, 476 (1969).
3. A. I. Tikhonov, USSR Author's Certificate No. 484,871. Byul. Izobret., No. 35, 12 (1975).

Zaporozh'e Medical Institute. Khar'kov Scientific-Research Institute of Pharmaceutical Chemistry.  
Translated from Khimiya Prirodnikh Soedinenii, No. 3, pp. 416-417, May-June, 1977. Original article submitted February 16, 1977.

This material is protected by copyright registered in the name of Plenum Publishing Corporation, 227 West 17th Street, New York, N.Y. 10011. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, microfilming, recording or otherwise, without written permission of the publisher. A copy of this article is available from the publisher for \$7.50.