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PRANCHIMGIN FROM CACHRYS ODONTALGICA

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The isolation of a substance 9 from C. odontalgica Pall, in addition to osthole, isoimperatorin, imperatorin, bergapten, and prangenin, has been reported previously [1]. Substance 9 melts at 141–142° C, has the general formula $C_{19}H_{20}O_5$, $[\alpha]_D^{20}$ −6.7 (c 0.2; chloroform). On acid hydrolysis it is cleaved to form marmesin and 2,2-dimethylacrylic acid.

The cleavage products, R_f values, IR spectra, and a mixed melting point show that substance 9 is pranchimgin [2].

The substances isolated from C. odontalgica, have also been found in Cryptodiscus didymus (Rgl.) Korov.

The sample of pranchimgin was kindly supplied to us by G. A. Kuznetsova.

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SPECTROPHOTOMETRIC DETERMINATION OF THE AMORPHIN IN AMORPHA FRUIT

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The UV spectrum of the rotenoid glycoside amorphin [1] has two absorption maxima— $[\alpha]_D^{20}$—6.7 and 294 mμ (log ε 4.23). The second maximum is more suitable for quantitative spectrophotometric determination of the substance.

On this basis, we have developed a method for the quantitative determination of amorphin in plant raw material. The method of determining rotenoids based on the measurement of the optical density at two points of the absorption curve [2] is unsuitable for unpurified extracts because of the presence of foreign rotenoids in them. Chromatography in a thin layer of silica gel was used to separate the amorphin from the accompanying substances.

About 1.1 g (accurately weighed) of comminuted Amorpha fruit was defatted by being steeped in petroleum ether five times and was then dried and was shaken with 95% ethanol in a 50-ml measuring flask for 3 hr. A narrow (1.5 cm) reference band was separated on a glass plate (11 × 19 cm) with a thin layer of KSK silica gel fixed with gypsum. Two milliliters of the extract was deposited at the starting line of the main band and 0.1–0.2 ml at the control band, and chromatography was carried out by the ascending method in the benzene—methanol (3 : 1) system. The control band was treated with concentrated sulfuric acid and the amorphin zone in the main band was outlined by reference to the light pink spot of amorphin in the reference band (between 3.5 and 7.5 cm from the starting line) and this zone was then transferred to a column (2 × 20 cm). The amorphin was eluted with 95% ethanol to give 25 mm of eluate. The desorption of the amorphin from the silica gel took place almost completely, but to obtain more objective results 1 ml of a solution of standard amorphin (11 mg in 25 ml of ethanol) was chromatographed under the same conditions on another plate and the eluate was used as the standard solution.

The optical densities of the test and standard solutions were measured on an SF-4 instrument at a wavelength of 294 mμ in a cell 1 cm thick. 95% ethanol was used as the blank.

The content of amorphin in the raw material, % (X) was calculated from the formula:

$$X = \frac{a \cdot b \cdot C_{st} \cdot D_x}{10 \cdot m \cdot v \cdot D_{st}},$$