where a is the volume of ethanolic extract of the plant raw material, ml;

b is the volume of the ethanolic eluate from the column, ml;

C_{st} is the concentration of the standard solution, mg/ml;

D_x and D_{st} are the optical densities of the test and standard solutions, respectively;

m is the weight of the plant material, g; and

v is the amount of extract deposited on the plate, ml.

When standard amorphin is not available, the calculations can be carried out according to a well-known formula, using the specific absorption coefficient of amorphin ($E^{1\%}_{1cm} = 242$).

The content of amorphin in ripe fruit of Amorpha fruticosa varied between 0.65 and 0.76%.

REFERENCES

1. E. S. Kondratenko, A. U. Kasymov, and N. K. Abubakirov, KhPS [Chemistry of Natural Compounds], **3**, 307, 1967.

2. R. Payfer, J. Ass. Agric. Chem., 37, 3, 630, 1954.

15 October 1958

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UDC 547.972.2

RUTIN IN SOME SPECIES OF ONOBRYCHIS ADANS

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Khimiya Prirodnykh Soedinenii, Vol. 5, No. 3, pp. 178-179, 1969

In a study of the composition of 16 species of Onobrychis—sainfoin—growing in Georgia, it was shown that all the plants are rich in flavonoids.

The present paper gives the results of a study of those sainfoins which contain mainly rutin with only small amounts of other flavonoids.

To isolate the rutin, the raw material was extracted with 80% methanol. After the methanol had been driven off, the aqueous liquid was purified with chloroform, and left to crystallize [1]. The substance that separated out was recrystallized from methanol. In this way from Onobrychis cyri we isolated a flavonoid with mp 184-185° C, $[\alpha]_D^{20}$ −37° (c 1.4; pyridine); from O. iberica a flavonoid with mp 185-186° C, $[\alpha]_D^{20}$ −37.9° (c 1.4; pyridine); and from O. inermis a flavonoid with mp 183-184° C, $[\alpha]_D^{20}$ −37.8° (c 1.4; pyridine). After the hydrolysis of the flavonoids, in all cases only quercetin was obtained in an amount of approximately 50%. Rhamnose and glucose were found in the carbohydrate moiety.

Mixed melting points of the rutins isolated and their aglycones gave no depression of the melting points; they also had the same IR and UV spectra and R_f values as authentic samples of rutin and quercetin.

The amount of rutin was determined in nine species of sainfoin. For this purpose the extracts of the material investigated [2] were separated on a plate coated with polyamide [mobile phase methanol—ether—ethyl acetate (1 : 1 : 1)]. The rutin zone was separated and eluted, and the amount of rutin was determined on an SF-4A spectrophotometer at 258 mμ. The yield was calculated from a calibration curve for pure rutin. It was found that the content of rutin in O. cyri is 1.9%; in O. iberica, 2%; in O. inermis, 1.8%; in O. daghestanica, 2.9%; in O. kluchorica, 2.3%; in O. transcaucasica, 1.52%; in O. altissima, 1.43%; in O. hamata, 1.48, and in O. kemularia, 1.8%.

REFERENCES

1. St. Stanev, Farmatsiya (Bulgaria), no. 4, 37, 1961.

2. T. T. Litvinova and A. S. Prozorovskii, Trudy 1-go Mosk. med. in-ta, **18**, 115, 1962.

16 December 1968

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