KUMATAKENIN FROM Astragalus membranaceus

D. Dungérdorzh and V. V. Petrenko

UDC 547.972

In an investigation of the flavonoid composition of Astragalus membranaceus Fisch., which grows in the Mongolian People's Republic, by column chromatography on polyamide sorbent, we have isolated a substance $C_{17}H_{14}O_6$ in the form of yellow crystals readily soluble in methanol, ethanol, ethyl acetate, and ether, and insoluble in water and aqueous ethanol (mp 244-246°C). On chromatograms, the substance is detected by a dark coloration; after treatment with 3% ethanolic $ZrOCl_2$ it gives a yellow fluorescence which, under the action of ammonia vapor on the moist chromatograms, becomes green, R_f 0.66 (60% acetic acid) and 0.96 [benzene–ethyl acetate–acetic acid (73.5 : 24.5 : 2); paper impregnated with formamide]. Bryant's cyanidin reaction [1] showed that the compound studied has the nature of an aglycone.

The positions of the hydroxy groups in the substance were determined on the basis of a study of the UV spectra using ionizing and complex-forming reagents. It was found that the free hydroxy groups are present in the C-5 and C-4' positions.

The demethylation of the compound considered with hydriodic acid in liquid phenol and acetic anhydride [2] gave a compound with mp 274-276°C which was identified on the basis of bathochromy in the UV region of the spectrum and chromatographic behavior as 3,4',5,7-tetrahydroxyflavone (kaempferol).

Thus, the substance that we have isolated is 4',5-dihydroxy-3,7-dimethoxyflavone (kumatakenin), obtained previously from Alpinia kumatake [3].

We are the first to have isolated kumatakenin from representatives of the genus Astragalus.

LITERATURE CITED

1. E. Bryant, J. Amer. Chem. Soc., 39, 481 (1950).
2. É. D. Giorgobiani and N. F. Komissarenko, Soobshcheniya Akad. Nauk GruzSSR, 53, No. 2, 365 (1969).
3. Y. Kimura, M. Takido, Sh. Takahashi, and M. Kimishima, J. Pharm. Soc. Japan, 87, No. 3, 440 (1967).

State Medical Institute, Mongolian People's Republic. Zaporozhe Medical Institute. Translated from Khimiya Prirodnykh Soedinenii, No. 3, p. 389, May-June, 1972. Original article submitted December 30, 1971.