

More than 15 compounds of polyphenolic nature (monomeric flavan-3-ols and -3,4-diols and their derivatives, phenolic acids, carbohydrates, and anthraquinone derivatives) have been isolated from the roots of Rumex confertus L. [1].

In an investigation of the epigeal part of this plant collected in the environs of Alma-Ata the presence of free and bound anthraquinones and carbohydrates and of flavonol glycosides was detected by paper chromatography. There were no flavans in it.

We have obtained three individual substances by adsorption-partition chromatography on various solvents. From the positions on a chromatogram, all belong to the class of glycosides. Glycoside (1),  $C_{21}H_{20}O_{11}$ , mp 172-174°C (methanol),  $[\alpha]_D^{22} -35.5^\circ$  (c 0.02; methanol); glycoside (2),  $C_{21}H_{20}O_{12}$ , mp 234-236°C (methanol),  $[\alpha]_D^{22} -38.02^\circ$  (c 0.15; methanol); glycoside (3)  $C_{21}H_{20}O_9$ , mp 237-239°C (methanol).

Quantitative acid hydrolysis (5% HCl, 2 h) yielded the aglycones (kaempferol, quercetin chrysophanic acid) and D-glucose, which were identified by paper chromatography with markers in a ratio of 1:1. The positions of the sugar in glycosides (1) and (2) were determined by UV spectroscopy. The natures of the bonds and of the sugar rings in the glycosides were confirmed by the presence of characteristic absorption bands in the IR spectra and, for glycosides (1) and (2), by calculations of molecular rotation.

The results of the investigations performed enabled the substances isolated to be identified as kaempferol 3-β-D-glucopyranoside (astragalín), quercetin 3-β-D-glucopyranoside (isoquercitrín), and chrysophanic acid β-D-glucopyranoside (chrysophaneín). All these substances are widely distributed in plants.

## LITERATURE CITED

1. T. K. Chumbalov and M. M. Mukhamed'yarova, Collection of Papers from the Department of Organic Chemistry on the Chemical Composition of Plant Raw Material [in Russian], Alma-Ata (1962).