

From the seeds of the wallflower, *Cheiranthus cheiri* L. (family Cruciferae). Swedish investigators have isolated two cardiac glycosides — cheirotoxin and cheiroside A, which are, respectively, strophanthidin 3 $\beta$ -O-[4'-O- $\beta$ -glucopyranosyl- $\beta$ -D-gulomethylside] and uzarigenin 3 $\beta$ -O-[4'-O- $\beta$ -D-glucosyl- $\beta$ -D-fucoside] [1-3].\*

A qualitative paper-chromatographic analysis showed that wallflower seeds contain more than 30 cardiac glycosides.

We studied the seeds of *Cheiranthus cheiri* L. sent to us from the Crimea Botanical Garden and the Moscow Floricultural Association. The ground and petroleum-ether-defatted seeds were exhaustively extracted with ethanol. The ethanolic extract was concentrated in vacuum. The residue was converted into an aqueous solution and additionally defatted with petroleum ether and was then purified with inactivated alumina. The cardenolides were extracted from the purified aqueous solution successively with diethyl ether, methylene chloride, chloroform, and chloroform-ethanol (3 : 1 and 2 : 1). The fractions obtained were provisionally separated into five groups: cardenolides of low polarity (1, 2) and of medium polarity and polar cardenolides (3, 4). Then the aqueous solution was saturated with sodium sulfate and was repeatedly extracted with chloroform-ethanol (2 : 1), giving a fraction of highly polar cardenolides (5). The fraction of polar cardenolides (3) was chromatographed on alumina (activity grade III) using ethanol-chloroform (10 : 90-45 : 55) as eluant. Five cardiac glycosides were isolated in the individual crystalline state. Three of them were identified by direct comparison with authentic samples as cheiroside A, erycordin, and glucoalliside [6-8].

The other two glycosides were provisionally denoted by the symbols Ch 4A (mp 248-253°C,  $[\alpha]_D -10.5 \pm 2^\circ$ , in methanol) and Ch 4B (mp 259-262°C,  $[\alpha]_D -26.5 \pm 2^\circ$ , in pyridine); they are now being studied.

In a chromatographic comparison of the total cardenolides from the wallflower *Cheiranthus cheiri* L. and plains erysimum, *Cheiranthus allioni* Hort. (*Erysium asperum*), it was seen that they have great similarity. In any case, *Ch. cheiri* L. contains cardiac glycosides which, from their positions on chromatograms, coincide with the main glycosides of *Ch. allioni* Hort. — glucoerysimoside, alliside, cheirotoxin, glucobipindogulomethylside, erycordin, cheiroside A, neouzarin, and digifucocellobioside.

## LITERATURE CITED

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\*The positions of linkages of the sugars (1-4) in cheirotoxin and cheiroside A were established by us.

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