

HYDROXYMETHYLANTHRAQUINONES FROM THE WASTES FROM THE PRODUCTION OF RHAMNIL

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The rhamnol preparation suggested by the Institute of Pharmacochemistry of the Academy of Sciences of the Georgian SSR, which is isolated from the bark of the alder buckthorn, is widely used in medicine as a gentle laxative [1-3]. Rhamnol contains about 65% of hydroxymethylantraquinones (HMA), consisting of frangulin (45%), frangula emodin (12%), and chrysophanol (6%) [4].

The wastes from the production of rhamnol in the form of the ground raw material and the aqueous mother liquors still contain a considerable amount of active HMA. The ground material contains about 3.5% of HMA (50% of their initial content of this material), and the aqueous mother liquor about 0.2%.

In order to obtain the HMA, the ground material was treated with an aqueous solution of sodium hydroxide (pH 8.5-9). The extract was acidified with hydrochloric acid to pH 3-4. The precipitate was dried and extracted with ethanol-chloroform (1:3). The ethanolic-chloroform extract deposited a yellow-orange crystalline powder of combined HMAs having the same composition as the rhamnol preparation. Yield 1%.

The HMAs were extracted from the aqueous mother liquor with ethyl acetate, giving 0.18% of this material. It was separated on a column of silica gel. Elution was performed with chloroform and chloroform-ethanol. The ground material yielded four, and the mother liquor two, individual compounds, which were identified with authentic samples by their melting points, mixed melting points, elementary compositions, UV and IR spectra, and R_f values on paper and thin-layer chromatograms.

The substances isolated from the ground raw material for rhamnol were characterized as frangulin with mp 226-230°C, frangula emodin with mp 260-262°C, physcion with mp 206-208°C, and chrysophanol with mp 201-203°C, and the substances from the aqueous mother liquor were frangulin with mp 196-198°C, and frangula emodin with mp 256-258°C. The method for isolating the total HMAs has been introduced into the production of rhamnol in order to obtain an additional amount of this material.

LITERATURE CITED

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