

HYDROXYMETHYLANTHRAQUINONES FROM THE
ROOTS OF *Rhamnus imeretina*

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The presence of hydroxymethylanthraquinones (HMA) in the bark of the plant *Rhamnus imeretina* Köhn., which is widely distributed in Georgia, was first established by Mshvidobadze [1], who isolated frangulin and emodin from it. Subsequently, from the same raw material, Gelbakhiani et al. [2] obtained a preparation containing the combined HMA.

We have investigated the bark of *Rh. imeretina* kept for a year after its collection. The amount of HMA was determined by Auterhoff's method as modified by Romanova [3]. The total content of free and combined HMA in the raw material was 5.6%, the amount of free HMA being 1.4%. Chromatography in a thin layer of silica gel in the solvent systems ethyl acetate-methanol-water (100:16.5:13.5) and toluene-acetone-50% acetic acid (4:1:0.5) [4] was carried out in parallel with that of authentic samples. An ethanolic extract of the bark was found to contain glucofrangulin, frangulin, frangula emodin, and chrysophanol. To isolate the HMA, the raw material was extracted with water made alkaline with caustic soda to pH 8.5. The extract was acidified with hydrochloric acid to pH 3. The precipitate was filtered off, washed with water, dried, and extracted with a mixture of ethanol and chloroform (1:5). The ethanolic-chloroformic extract, after the elimination of the solvent, was separated by adsorption chromatography on a column of silica gel. Elution was performed with benzene and mixtures of benzene with gradually increasing amounts of ethanol. Four individual substances of anthraquinone nature were obtained which were characterized by their melting points, mixed melting points, UV and IR spectra, mobility on a thin-layer chromatogram, and also, in the case of the glycoside, by the products of hydrolysis as chrysophanol, frangula emodin, physcion, and frangulin.

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