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Neutral components of an emulsion extract from pine wood greenery

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Abstract

The presented work is connected with the solution of the problem of rational environmental management and the transition to modern resource-saving technologies. The search for highly effective methods of processing renewable plant raw materials to obtain a complex of useful substances and materials is an actual task. Low molecular weight compounds are one of the most numerous and widespread groups of natural compounds that attract attention due to the wide variety of their biological activity.

The isolation of the extractive components of pine wood greenery (*Pinus sylvestris*) was carried out by the method of emulsion extraction developed at the Institute of Chemistry of the Federal Research Center of the Komi Scientific Center of the Ural Branch of the Russian Academy of Sciences. The method is as good as traditional technologies for the isolation of extractive substances, but at the same time it allows the simultaneous extraction of a complex of lipophilic and hydrophilic compounds of different polarity without the use of organic solvents, with a yield of up to 10% by weight of dry raw materials.

To study the chemical composition of the emulsion extract of pine wood greenery, essential oils were isolated by hydrodistillation with a yield of 0.8 % of the dry raw material weight. The component composition of essential oils was analyzed by gas chromatography-mass spectrometry and the highest content of sesquiterpenoids with a predominance of germacrene D and δ -cadinene was established.

To study the composition of the unsaponifiable components of the pine emulsion extract, the yield of which was 0.93% of the dry raw material weight, they were fractionated by column chromatography and studied by spectral methods. The main identified components are: isoabienol (0.53% by weight of dry raw materials), dehydroabietinol

(0.14%), polyprenols (0.41%), β -sitosterol (0.14%), isopimarinal (0.034%), *p*-cymene (0.06%), and *p*-cymene-8-ol (0.07%).

The content of components with high biological activity in the emulsion extract of pine wood greenery testifies to the prospects of their practical use.

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