

Determination of heavy metal ions in extracts of the prickly root of eleutherococcus

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Abstract

The content of cadmium, mercury, zinc and cuprum ions in extracts of Eleutherococcus prickly root powder was determined by stripping voltammetry. The content of Zn²⁺ cations in the aqueous extracts of the plant adaptogen was below the detection limit for the analysis method used. The concentration of ions Cd²⁺, Pb²⁺ in aqueous extracts it was less than 0.0002 mg/kg. The amount of cuprum ions did not exceed 2.6 mg/kg. Consequently, the concentrations of heavy metal cations are below the MPC level (maximum permissible concentration), which allows us to speak about the toxicological safety of the plant material studied. Increasing the maceration temperature from 23 to 40 °C reduces the efficiency of the process. The possible causes of this phenomenon are discussed. The source of raw materials does not have a significant effect on the content of pollutants. For the extraction of plant materials, along with distilled water, tap water can be used, which in its performance meets the standards for the content of heavy metal ions in all areas of the city of Kazan. The maximum value of the total pollution indicator is 4.5 mg/l. It was found in tap water selected in the Vakhitovsky district of the city of Kazan. However the maximum lead content is characteristic of the water selected in the Soviet district of the city. Distillation of water is expected to reduce pollution by pollutants. However complete purification from heavy metal ions does not occur. The most intense distillation is the purification of water from cuprum ions. The minimum amount of pollutants is found in ethanolic extracts of Eleutherococcus root powder. It is obvious that ethanol, as an extractant of heavy metal cations, is less preferable than water.

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