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ELEMENTARY COMPOSITIONS OF THE FRUITS OF *Morus nigra* AND *Zizyphus jujuba* AND THEIR BIOLOGICAL ACTIVITIES

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We have studied the elementary compositions of the fruits of *Morus nigra* L. and *Zizyphus jujuba* Mill. and their biological activities in order to determine the desirability of using these fruits as a component of toothpastes. The plants concerned are widely distributed in Uzbekistan and their fruits contain a considerable amount of such biologically active agents as tannin and mucilaginous substances, essential oils, glycosides, flavonoids, amino acids (including essential ones), vitamins of the A, B_1, B_2, C, and P groups, and choline [1, 2], which, on entering the organism determine some physiological effect or other.

When the fruits of these plants were subjected to chemical analysis, the presence of alkaloids possessing basic properties and very important for the hygiene of the oral cavity was detected [3].

A neutron-activation investigation of the macro- and microelement composition of the fruits of *Morus nigra* and *Zizyphus jujuba* has been carried out. To determine the biological activities of these fruits under the conditions of experiments on animals (80 white rats) their teeth were subjected to elementary analysis [4].

In the *Moris nigra* fruit we found high levels of calcium (6.6 ± 1.2 mg/g), phosphorus (5.8 ± 1.3 mg/g), potasium (15.0 ± 4.0 mg/g), fluorine (34.0 ± 3.0 μg/g), cobalt (0.38 ± 0.07 μg/g), iron (180.0 ± 42.0 μg/g), chromium (0.81 ± 0.14 μg/g), silver (0.41 ± 0.04 μg/g), zinc (12.0 ± 2.7 μg/g), copper (7.6 ± 1.5 μg/g), molybdenum (3.7 ± 1.0 μg/g), strontium (31.0 ± 5.5 μg/g), manganese (16.0 ± 2.8 μg/g), and nickel (10.0 ± 3.7 μg/g), and low levels of sodium (1.1 ± 0.2 mg/g), chlorine (0.30 ± 0.7 mg/g), lanthanum (0.14 ± 0.1 μg/g) and thorium (0.083 ± 0.024 μg/g), while in the *Zizyphus jujuba* fruit we found high levels of calcium (5.4 ± 0.7 mg/g), potassium (7.0 ± 1.4 mg/g), bromine (1.20 ± 0.05 μg/g), rubidium (8.50 ± 0.24 μg/g), and lanthanum (0.19 ± 0.03 μg/g), and low levels of sodium (0.6 ± 0.2 mg/g), chlorine (0.20 ± 0.02 mg/g), fluorine (15.6 ± 1.5 μg/g), scandium (0.017 ± 0.003 μg/g), cesium (0.039 ± 0.004 μg/g), molybdenum (1.40 ± 0.18 μg/g), and thorium (0.032 ± 0.011 μg/g). Consequently the fruit of *Morus nigra* is richer in important chemical elements necessary, in particular, for strengthening the solid tissues of the teeth: calcium, phosphorus, fluorine, cobalt, iron, chromium, silver, zinc, copper, molybdenum, strontium, manganese, and nickel. At the same time, the fruit of *Zizyphus jujuba* is enriched with calcium, potassium, bromine, rubidium, and lanthanum.

The results of experimental investigations on animals using extracts of the fruits of the plants under investigation in the form of a systematic irrigation of the oral cavity with a 10% tincture and cleaning the teeth with a sample of paste containing extracts of these fruits showed their very high biological activity in the normalization of the macro- and microelement homeostasis of the solid tissues of the teeth in comparison with known agents. The use of the fruits of these plants as components of a group of therapeutic-propylactic measures in cases of disturbed mineral metabolism in the teeth may be extremely useful and is completely substantiated.

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