

## THE BIOLOGICAL ROLE OF SPECIFIC COMPONENT OF FLUORIDE IN MINERAL WATER "BORJOMI": AREA FOR FUTURE RESEARCH

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**Introduction.** The mineral water "Borjomi" is classified as a natural mineral healing-table sodium bicarbonate, boric-silicic-fluoride medium mineralization (M6,3), weakly acid carbonated water. The use of "Borjomi" is beneficial in providing the body with calcium, phosphorus, magnesium, potassium, sodium, chlorine, iron, iodine, fluorine, and copper. Due to its chemical composition, this mineral water is primarily employed for drinking in cases of diseases related to the gastrointestinal tract, liver and biliary tract, as well as metabolic disorders.

**Aim.** The aim of the study is to specifically investigate the mineral fluorine to broaden the spectrum of preventive and curative properties of "Borjomi."

**Material and methods.** In the year 2022, a laboratory examination was conducted on "Borjomi" drinking water. The examination involved a comprehensive analysis of the fluoride levels present in the water, and detailed descriptions of these fluoride values were provided.

**Results.** "Borjomi" contains fluorides, with a content that exceeds 1 mg/L. Based on the 2020 laboratory research results, the fluoride content in well samples ranged from 5.4 to 10.6 mg/dm<sup>3</sup>, and in poured samples, it was 6.8 mg/dm<sup>3</sup>. Fluorine ions (F) play a crucial role in mineral exchange, strengthening enamel, hair, and nails. Fluorine also participates in enzymatic and biochemical reactions, supports hematopoietic processes, eliminates dangerous radionuclides from the body, and accelerates bone healing. Additionally, fluoride may exhibit antibacterial properties by inhibiting bacterial growth. An excess of fluorine can lead to endemic fluorosis, particularly in natural areas where there is an abundance of fluorine in the water. The fluorogenic condition occurs when the water contains 1.5 mg/L or more of fluoride, especially in hot climates. If the concentration of fluoride in natural mineral waters exceeds 1.5 milligrams per liter, the label must indicate "contains more than 1.5 mg/L fluoride: not suitable for regular consumption by infants and children under 7 years of age," and it must also specify the actual fluoride content. However, it's important to note that the toxicity of fluorine in the form of complex compounds is reduced, and it is easily absorbed. Fluorine has the ability to form complex chemical compounds, particularly hard ones with calcium, magnesium, aluminum, iron, boron, and beryllium ions.

**Conclusions.** The mineral water "Borjomi," in addition to its currently known and acknowledged preventive and curative effects, is anticipated to yield other positive effects. These effects should be grounded in scientific analyses of the properties of the complex mineral substances present in "Borjomi," drawing on the results of modern research and international experiences in the field. Moreover, research efforts should focus on evaluating the systematic intake and determining the correct dosage of drinking mineral waters that are rich in specific macro- and microelements. This research aims to enhance both the treatment and prevention of diseases.