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**Physical development and renal functions in adolescents consuming drinking water with high content of vital cations**Aizman Roman Idelevich<sup>1,2</sup>, S A Nedovesova<sup>1</sup>, M S Golovin<sup>1</sup>, M V Iashvili<sup>1</sup>, V V Turbinsky<sup>2</sup> and E M Trofimovich<sup>2</sup><sup>1</sup>Novosibirsk State Pedagogical University, Russia<sup>2</sup>Novosibirsk Scientific Research Institute of Hygiene, Russia

The problem of population supply with drinking water of adequate quality is one of the determinants for the majority of subjects. In 2016, the 52 regions of the Russian Federation were unfavorable in respect of the mineralized drinking water that was not balanced by macro and microelement composition. It can be considered as potential risk factors in the population. Therefore, the aim of the study was to investigate the level of physical development and health as well as kidney functions in pupils of 10-12 years in long-term consumption of drinking water with high content vs. control of sodium ( $224.6 \pm 22.5$  vs.  $61.2 \pm 6.1$  mg/L), calcium ( $80.8 \pm 5.2$  vs.  $65.9 \pm 4.3$  mg/L) and magnesium ( $55.1 \pm 3.4$  vs.  $37.5 \pm 2.2$  mg/L). Evaluation of physical health of pupils and morphological parameters (Kettle index, strength of muscles, heart rate, blood pressure, reaction of the cardiovascular system to physical activity, lung capacity and vital index) showed a lower level of physical development, health and functional possibilities of the cardiorespiratory system of children consuming drinking water with high content of ions. In these pupils it has been found an increasing diuresis already in the morning background samples. After the water load (1% of body mass) in the examinees the reactivity of the renal response also increased compare to control group (it was observed a more pronounced elevation in diuresis and excretion of sodium, calcium and especially urea), which may indicate the high reactivity of osmo and ionoregulatory mechanisms. It also cannot be excluded that increased ion excretion was due to the higher their intake with drinking water and/or a decrease in the concentration of corticosteroids. The findings suggest an adverse effect of high concentrations of cations in drinking water on morphofunctional development and health of children, despite the adaptive changes of renal functions and hormonal mechanisms of their regulation.

**Biography**

Aizman Roman Idelevich is Doctor of Biological Sciences, Professor, Honored Worker of Science of Russia, Head of the Department of Anatomy, Physiology and Safety, Director of the Institute of Health and Safety. He is a Member of 3 dissertation councils for doctoral theses, a Foreign Member of the American Physiological Society, a valid Member of the European Society of Pediatric Nephrology and an Associate Editor of two scientific journals. He is author of over 500 scientific and methodical works, including 28 monographs, 90 manuals, 367 articles in refereed journals and 16 proposals, patents and registration certificates. He was awarded Diplomas of the Ministry of Education of the Russian Federation, Ministry of Emergency Situations, the Administration of the City and Region (Novosibirsk) the Medal Property of Siberia, K. D. Ushinsky Medal, etc.

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