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Determination of cadmium and lead in milk

© **Svetlana V. Zhitar**,*+ **Natalia N. Yaschenko**, **Anatoly N. Lyschikov**, and **Elena G. Zinovieva**
General, Inorgsnic and Analitical Chemistry Department. Chuvash State University. Moskovsky Ave., 15. Cheboksary, 428015. Chuvash Republic. Russia. Phone: +7 (8352) 45-24-68. E-mail: svezhi@yandex.ru

*Supervising author; +Corresponding author
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Abstract

This paper presents the results of quantitative determination of cadmium and lead in milk, the quality of which is regulated by the Federal Law "Technical Regulations for Milk and Dairy Products" No. 88-FL of 12.06.2008, which indicates permissible levels of toxic substances in milk and basic dairy products. Cadmium and lead, as well as their compounds, are highly toxic substances of cumulative action and pose a serious danger to human and animal health, which makes regular monitoring of the content of these heavy metals in food, in particular milk, relevant. Eight samples of milk sold in the territory of the Chuvash Republic were selected as subjects of the study. Among them are six samples from popular shops of Cheboksara (trademarks “Just”, “Fresh tomorrow”, “From Krasuli”) and two samples of raw cow milk of private farms of Yadrin district (village of Grand Sundyr and village of Persirlana). The analysis of the crude, pasteurized and ultra heat-treated milk of various producers on the content of lead and cadmium at their joint presence was carried out by methods of an inversion voltamperometriya (GOST P 51301-99) and atomic and absorbing spectrometry (MU 01-19/47-11-92 “Methodical instructions by atomic and absorbing methods of definition of toxic elements in foodstuff”) and also in accordance with GOST 26932-96 “By raw materials and foodstuff. Lead Determination Methods” and GOST 26933-86 “Raw Materials and Food Products. Cadmium definition methods”. The minimum lead and cadmium content is found in “Just” brand milk samples of 0.0052±0.0016 and 0.0011±0.0013 mg/kg, respectively. The maximum lead content is found in samples of raw milk of Yadrin district (0.0262±0.0017 mg/kg), and cadmium – in milk of the manufacturer of the trademark “Just” from factory *“Semisovsky”* (0.0049±0.0007 mg/kg). It has been found that all the samples studied contain a very small amount of heavy metals, which does not exceed the MPC value, which makes it possible to highly assess the quality of milk and dairy products sold in Chuvashia.

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