

## Influence of chemical composition of the dental paste on the buffering systems in the mouth and the environmental indicator

© Svetlana N. Gromova,<sup>1\*</sup> Svetlana A. Kuklina,<sup>2</sup> Anton V. Elikov,<sup>2</sup>  
Olga A. Smetanina,<sup>1</sup> and Sergey B. Petrov<sup>3</sup>

<sup>1</sup> Department of Dentistry. <sup>2</sup> Department of Chemistry. <sup>3</sup> Department of Hygiene. Federal State Budgetary Educational Institution of Higher Education "Kirov State Medical University" of the Ministry of Healthcare of the Russian Federation. K. Marx St., 112. Kirov, 610998. Kirov Region. Russia.

Phone: +7 (8332) 64-09-76. E-mail: [med@kirovgma.ru](mailto:med@kirovgma.ru)

\*Supervising author; †Corresponding author

**Keywords:** buffer systems of saliva, the acid-base balance in the oral cavity, enamel demineralization, toothpaste composition.

### Abstract

In this paper we consider buffering properties of saliva, which are regulated by a colloidal system. It includes  $\text{Ca}^{2+}$  and  $\text{HPO}_4^{2-}$  ions, which affect on qualitative characteristics of saliva. The constancy of the pH determines neutralizing and mineralizing capabilities of saliva. The aim of this work was to define influence of toothpaste composition on the pH, salivary buffer systems, and the acid-base balance in the oral cavity. The acid-base disruption results in disbalance in demineralization-remineralization processes. Students of the Dentistry Department of Kirov State Medical University of the Ministry of Health of Russia took part in this research. They were divided into three groups. Each group had been using different products for 28 days. We selected 3 toothpastes of the same manufacturer. These toothpastes contain same ingredients, which by their chemical properties are not able to affect on the pH of the oral fluid and salivary buffer systems accordingly. However, there were distinctive components such as dicalcium phosphate dihydrate, hydroxyapatite, tetrakali pyrophosphate, calcium lactate, which increase  $\text{NRA}_4^{2-}$  and  $\text{Ca}^{2+}$ . This fact has a positive effect on maintaining fixity of the phosphate buffer system in the oral cavity. It therefore helps to normalize the pH to a neutral level. The acid-base equilibrium is supported by buffering properties of saliva. It knows that saliva is regulated by the colloidal system including  $\text{Ca}^{2+}$  and  $\text{HPO}_4^{2-}$  ions. These ions are part of the phosphate buffer system, which affect on qualitative characteristics of saliva. Based on the above, there is dependence between the row of toothpaste ingredients and protein level, hydrogen phosphate ions, calcium ions, and pH values.

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- INFLUENCE OF CHEMICAL COMPOSITION OF THE DENTAL PASTE ON THE BUFFERING SYSTEMS...* 104-110  
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