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**Research Article**

### THE EFFECTIVENESS OF THE USE OF THERAPEUTIC TOOTHPASTES IN ORDER TO INCREASE THE HUMIDITY OF THE MOUTH IN PATIENTS WITH RADIO-INDUCED XEROSTOMIA

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#### Abstract

*Significant dryness of the oral cavity occurs in 100% of cases in patients with radiotherapy of maxillofacial tumors in history, while in 55.9% of patients the radio-induced xerostomia persists for a long time (from one year to two and a half years or more) and may be the reason for the deterioration in their quality of life. The aim of the study was to assess the hygienic and moisturizing effect of toothpastes without lauryl sulfate in the group of patients with radio-induced xerostomia. The study involved 80 people diagnosed with "exacerbation of chronic generalized periodontitis of moderate severity" at the age of 60 to 85 years. Patients were told in detail about the stages of the study, as well as the obligation to brush their teeth at least 2 times a day and not to use other drugs for oral hygiene.*

*Patients were divided into two groups of 20 people, depending on the used paste. Assessment of subjective sensations in patients who used toothpaste №1 and №2 showed, in general, satisfaction with the organoleptic, anti-inflammatory and haemostatic properties of toothpastes. Also in both groups, patients noted an increase in saliva secretion, no irritation of the oral mucosa, especially in the areas of adherence to the element of orthopedic structures. Toothpaste containing 4% betaine has a pronounced anti-inflammatory effect and a decrease in the viscosity of saliva. It has been established that gel pastes on a non-lauryl sulfate base can be recommended for maintenance use in patients with xerostomia, including those having a radio-induced nature.*

**Key words:** sodium lauryl sulfate, betaine, toothpaste, radio-induced xerostomia, old age.

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## INTRODUCTION:

### Relevance of the problem

Significant dryness of the oral cavity occurs in 100% of cases in patients with radiotherapy of tumors of the maxillofacial area in the anamnesis [3], while in 55.9% of patients radio-induced xerostomia [10] persists for a long time (from one year to two and a half years or more) and may be the reason for the deterioration in the quality of their life [4]. Xerostomia increases the risk of dental caries, and in elderly and elderly patients also contributes to the emergence of secondary caries in the area of adherence of elements of partially removable dentures. According to several authors [5,7, 8] the clinical manifestations of the effects of radiation exposure can be very different and depend on the received radiation dose and the type of ionizing radiation. Due to the development of xerostomia, a cariogenic situation is created in the oral cavity, hygiene of the oral cavity is impaired, self-purification of the oral cavity is reduced [9]. It is established [6] the dependence of the degree of disbiotic shifts on the level of pollution in the region and the change in microbiological status with prolonged exposure to the radiation factor. It was [1] it is shown that more patients listen to the doctor's recommendations as they age, which is directly proportional to their age.

**The aim** of the study was to evaluate the hygienic and moisturizing effects of toothpastes without lauryl sulfate in the group of patients with radioinduced xerostomia.

### MATERIALS AND METHODS:

The study involved 80 people diagnosed with "exacerbation of chronic generalized periodontitis of moderate severity" at the age of 60 to 85 years. According to Russian state standart 52379-2005 "good clinical practice", patients received written consent to participate. The criterion for inclusion in the study was the presence of xerostomia in patients. Patients were told in detail about the stages of the study, as well as the obligation to brush their teeth at least 2 times a day and not to use other drugs for oral hygiene.

The study was conducted in 3 stages

Stage 1 included a primary examination of the patient, oral hygiene training and a standard method for cleaning teeth using the Bass method.

Stage 2 included the actual use of oral hygiene products for 3 weeks.

Stage 3 included the re-definition of dental indices.

Patients were divided into two groups of 20 people, depending on the used paste.

Tooth-paste No. 1 included: Syloblanc®; Alpha-bisabolol; Alpha-eucalyptol; Anise oil; Bioavailable calcium; Thyme; Sage; Eucalyptus; Echinacea.

Tooth-paste number 2 included: Xylitol 10% and potassium salts; Betaine 4.00%; Fluorine 0.321% (1500 ppm); Allantoin 0.10%.

### RESULTS OF THE STUDY:

Assessment of subjective sensations in patients who used toothpaste №1 and №2 showed, in general, satisfaction with the organoleptic, anti-inflammatory and haemostatic properties of toothpastes. Also in both groups, patients noted an increase in saliva secretion, no irritation of the oral mucosa, especially in the areas of adherence to the element of orthopedic structures. Group 1 also had good cleansing, refreshing and antipruritic effects, and in group 2 patients indicated a greater decrease in saliva viscosity against a background of moderate cleansing and antipruritic effect.

It is noted that toothpaste containing 4% Betaine has an anti-inflammatory effect, which is especially important against the background of increased viscosity of saliva and general dryness of the oral cavity in patients suffering from xerostomia.

At the initial assessment of the hygienic index for Fedorov-Volodkina in both groups, the indicator corresponded to the value of "poor hygiene index", amounting to 2.8 in the first group and 2.9 in the second group. When the indexes were re-evaluated after 3 weeks, it was shown that in both groups there was a significant improvement in hygiene indices, however in the first group the hygiene index corresponded to the value "satisfactory", while in the second group it was "good".

The effectiveness of anti-inflammatory properties of hygiene products used by patients is clearly shown in the results of the Schiller-Pisarev test, which was evaluated at the beginning of the study, at the 2nd and 3rd weeks. At the end of the study, a positive Schiller-Pisarev test was not seen in the second group, a weak positive value was maintained in the patients of the first group.

### CONCLUSIONS:

Toothpaste containing 4% betaine has a pronounced anti-inflammatory effect and a decrease in the viscosity of saliva. It has been established that gel pastes on a non-lauryl sulfate base can be recommended for maintenance use in patients with

xerostomia, including those having a radioinduced nature.

deprived community. *Comm Dent Oral Epidemiol* 27 (1999) 103-108.

#### REFERENCES:

1. Vasiliev Yu.L., Kolomiychenko ME, Nagin G.T. The results of the study of the main factors influencing the choice of oral hygiene products by modern man. *Children's dentistry and prevention*. 2014. T. 13. № 2. P. 49-52.
2. Vavilova, T.P Use of indicators of mixed saliva in assessing the condition of periodontal tissues // *Russian Dental Journal*. - 2010. - №1. - P.10-12.
3. Vasiliev Yu.L., Slyusar OI, Kolomiychenko M.E. Experience in the use of toothpastes without sodium lauryl sulfate in patients with xerostomia. *Children's dentistry and prevention*. 2015. P. 14. № 1. P. 62-65.
4. Pavlova, M. Differential diagnosis of various forms of xerostomia. Treatment options: Author's abstract. dis. ... cand. honey. sciences. M., 2001.
5. Zhang Y, Ou D, Gu Y, He X, Peng W. Evaluation of Salivary Gland Function Using Diffusion-Weighted Magnetic Resonance Imaging for Follow-Up of Radiation-Induced Xerostomia. *Korean J Radiol*. 2018 Jul-Aug;19(4):758-766. doi: 10.3348/kjr.2018.19.4.758.
6. van Dijk LV, Thor M, Steenbakkers RJHM, Apte A, Zhai TT, Borra R, Noordzij W, Estilo C, Lee N, Langendijk JA, Deasy JO, Sijtsema NM. Parotid gland fat related Magnetic Resonance image biomarkers improve prediction of late radiation-induced xerostomia. *Radiother Oncol*. 2018 Jun 26. pii: S0167-8140(18)33309-7. doi: 10.1016/j.radonc.2018.06.012.
7. Salum FG, Medella-Junior FAC, Figueiredo MAZ, Cherubini K. Salivary hypofunction: An update on therapeutic strategies. *Gerodontology*. 2018 Jun 29. doi: 10.1111/ger.12353.
8. Yablokova NA, Sipyagina A.E.. Pathogenetic mechanisms and prevention of radiation damage to organs and tissues of the oral cavity. *Dental Forum*. 2013. № 2. P. 34-36.
9. Cortellini P., Labriola A., Zambelli R., Pini Prato G., Neri M., Tonetti M.S. Chlorhexidine with an anti-discoloration system after periodontal flap surgery: a cross-over, randomized, triple-blind clinical trial. *J Clin Periodontol* 2008; 35: 614-620.
10. Guchelaar H.J., Vermes A., Meerwaldt J.H. Radiation-induced xerostomia: pathophysiology, clinical course and supportive treatment // *Support-Care-Cancer*. 1997.-No.5 (4) .- P. 281-288.
11. Zimmer S., Robke F. J., Roulet J.f .: Caries prevention with fluoride varnish in a socially