

THE JUSTIFICATION OF APPLICATION OF MAGNETOSONIC WATER FOR ORAL CAVITY'S HYGIENE AND TREATMENT

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A microscopy of the preparations of dried oral liquid revealed turbidity of the background, the presence of the peeled epithelium of the oral mucosa, microflora, in a small quantity fragments of the dental plaque and tartar, crystals. The crystals were deformed, thinned, varied in size and location. The basis of crystals is a calcium phosphate. Contaminated oral liquid contributes to the formation of tooth decay and inflammation of the gums. The distilled water used for scaling of the teeth, activated by low-frequency sound and, in addition, by energy of a constant magnetic field, cleans oral liquid better and initiates a more perfect crystal formation than just sound water. The crystallography of a dried oral liquid visualized the effect of transformation of water after its activation by sound, that was slowly increasing to the 3rd day and its extinction on the 6-7th day, the magnetosonic energy intensified and extended the effect of activation up to 10 days. Effective was a one-time activation procedure, especially the exposure of 9 minutes. Activated by low-frequency sound in the field of a permanent magnet water is recommended to use in order to prevent pathogenic mineral formation after basic scaling of the teeth in the form of rinses, irrigations, baths, for dental cleaning and preparation of medicines. The activated water is stored in a container wrapped in foil.

Keywords: oral liquid, water, low frequency sound, constant magnetic field, cleansing, crystals

The tartar is formed as a result of the inclusion in the dental plaque of chemical macro- and microelements from the oral liquid, which during drying forms crystals with the basis of calcium phosphate [1]. The tartar is mainly represented by three types of apatites, the stability of which decreases in sequence of: hydroxylapatite > fluorapatite > francolite [5]. Scaling of teeth is carried out using the energy of sound, that breaks intercrystalline and intermolecular bonds, and water due to cavitation and turbulence [7]. The energy of a permanent magnet increases the fluidity and purifying properties of water [8]. In the field of a permanent magnet, the blood becomes less viscous, the oedema of tissues decreases, and the pharmacological action of the drugs improves [6]. An electric sound toothbrush is used for teeth cleaning [4]. Water, activated by ultrasound energy, low-intensity laser radiation, their combination, preserves the effect of interaction with a biological fluid for more than 10 days, transforms it [2]. Sound scaling of teeth improves the properties of oral liquid [3]. The effect of magnetosonic water on the patient's oral fluid, crystal formation has not been investigated.

Goal. To study the properties of the oral liquid interacting with magnetic sound water in dynamics with the method of microcrystallography, to establish effects of impact, duration of the consequences, give recommendations for the use of activated water for the prevention of pathogenic mineralization, oral hygiene and the treatment of dental patients.

Materials and methods of research

Oral liquid of 9 patients aged 19-22 years, men (n = 5) and women (n = 4) was examined. The oral fluid

intake was done with the help of a sterile syringe from the bottom of the oral cavity in 3-4 hours after eating. Oral liquid (V = 1.0-1.5 ml) was placed in test tubes. Preparations of smears for microscopy on the subject glasses were prepared by dehydration method (t = 24 °C). Water during the scaling of the teeth was activated, sprayed with a low-frequency sound from the scaler, AS 2000 (Japan), f 6200 – 6450 cycles / second, the dental unit GNATUS (Brazil). Magnetic voiced water was formed, passing through a ring magnet, B 40 mT, put on the sound scaler's nozzle. The water from the working scaling's nozzle was collected into tubes, wrapped in foil, stored for 10 days for the further research. Water, activated by sound or activated by sound in the field of a permanent magnet, was dripped (V = 0.05 ml) by a smear of dried oral liquid, which was the basic background, the control for comparison. The drop formed a spot (d = 10 mm) in the center of the preparation from a mixture of oral liquid and water. The preparations were dried in the air (t = 24 °C).

Two series of experiments were performed. In the first series, micro-preparations (n = 36) of the oral liquid interacting with distilled sound water were analyzed. The time of a single activation by sound was 1, 3, 6, 9 minutes. Samples of water were taken for the study in 1, 3, 6, 10 days after activation. In the second series, micro-preparations of the oral liquid interacting with distilled sound magnetic water (n = 36) were analyzed. An exposure of a single activation and the period of the studying after it were the same as in the first series. Analysis and description of oral fluid preparations were performed with a BI MAM R-13 microscope, an increase of 10x40, and a PC, displaying the image on a monitor.

Results of research and their discussion

The microscopy of preparations, controlled, without effects, showed that the oral liquid is muddy, contained the disintegrated epithelium of the oral mucosa, microflora, in a small number fragments of plaque and tartar, crystals. The crystals were different in shape and size, disposition, were thin, curved, fig. 1. A distinction between the background of the

oral liquid and the light spot of the mixture of oral liquid and water was made. The contours of the spot and the features of the formation of crystals were determined by the experimental conditions.

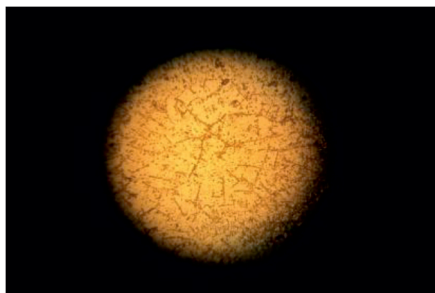


Fig. 1. Preparatus of oral fluid. Control. The background is muddy. Crystals are thin, deformed, peeled epithelium of the oral mucosa

The analysis and description of the selected micro-preparations of the patient F., 21 years old, illustrating the typical interaction of oral liquid and modifications of activated distilled water were given. *Series 1.* Preparation: a mixture of oral liquid and distilled water, sounded during the 1 minute and taken for the research on the next day from the beginning of the experiment. The spot of the mixture is lighter than the surrounding muddy main background, the crystals were more structured. *Series 1.* Preparation: a mixture of oral liquid and distilled water, sounded for 3 minutes and taken for analysis on the 3rd day after activation. The oral fluid of the main background was turbid, there were small crystals and their fragments. The mixture of oral liquid and activated water was light, purified, and large crystals were formed. *Series 1.* Preparation: a mixture of oral liquid and distilled water sounded for 6 minutes were taken for the research on the 3rd day after activation. In the spot the background was light, sound waves have moved impurities to the periphery, forming a belt without crystals between the liquids. Crystallization in the mixture was more intense than the crystallization of the oral liquid of the main, turbid background. *Series 1.* Preparation: a mixture of oral liquid and distilled water, sounded for 9 minutes and examined on the 3rd day after activation. Activated water cleared and improved the formation of saliva's crystals, sound waves shifted the impurities, forming a border belt of homogeneous mass that separated the liquids. Oral liquid of the main background was turbid with fragments of crystals. Activated by sound for 9 minutes, the water cleared the oral fluid more qualitatively in com-

parison with the exposures of 3 and 6 minutes, Fig. 2. *Series 1.* Preparation: a mixture of oral liquid and distilled water, sounded for 6 minutes and examined on the 10th day after activation. The differences were barely noticeable between the main background (darker) of the oral liquid and the background of the mixture of oral liquid with sounded water, there is no liquid separation belt. In the mixture the crystals were more structured. The extinction of the structural-modifying effect of the low frequency sound in distilled water to the 10th day after activation was observed, Fig. 3.

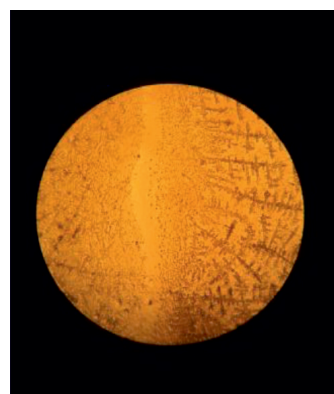


Fig. 2. Micro preparation. Series 1. Mixture of oral fluid and distilled water, sounded for 9 minutes and examined on the 3rd day after activation. On the right: background is light, obvious crystallization. On the left: the background is muddy, the crystals are located chaotically, thinned. In the center: a belt without crystals between the liquids, formed as a result of the displacement of impurities by sound waves on the periphery of the spot

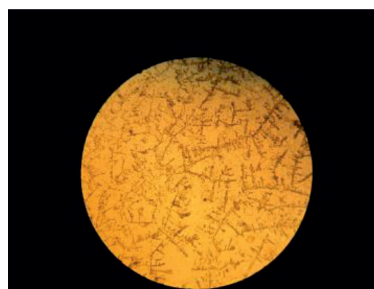


Fig. 3. Micro preparation. Series 1. Mixture of oral fluid and distilled water, voiced for 6 minutes and examined on the 10th day after activation. On the right: background is light, the crystals are long, thin, curved. On the left: the decomposition of oral fluid crystals. There is no belt between the liquids. The effect of water transformation by low-frequency sound on the 10th day of observation almost disappeared

Series 2. Preparation: a mixture of oral liquid and distilled magnetic sounded for 3 minutes water taken for the study on the 3rd day after activation. Magnetosonic water purified the oral liquid better than the preparations of the 1st series, the background of the mixture was light, a large number of crystals was formed. Oral liquid of the main background was turbid and included elements of crystals. *Series 2.* Preparation: a mixture of oral liquid and distilled magnetic sounded during 6 minutes water, examined on the 3rd day after activation. Activated water purified the oral liquid, crystallization was restored. Magnetosonic waves shifted impurities to the periphery, compressed, a strip without crystals between the liquids appeared. Oral liquid of the main background became more turbid, included particles of crystals, Fig. 4. *Series 2.* Preparation: a mixture of oral liquid and magnetic distilled water, sounded for 9 minutes, examined on the 3rd day after activation. Longer activation of water cleared the oral liquid better. Structured crystals appeared. The main background around the spot became more turbid and included small fragments of crystals. The magnetosonic shock wave pressed the impurities into the sediment, shifted spots to the periphery, formed a wide belt without crystals between the liquids, Fig. 5. *Series 2.* Preparation: a mixture of oral liquid and magnetic distilled water, sounded for 9 minutes and examined on the 10th day after activation. Oral liquid was purified by activated water, the background was light, the crystals were small, structured, there was not belt between the liquids. The main background of the oral liquid is muddy, dark, and included fragments of crystals. The effect of transformation by magnetosonic energy of water has significantly decreased on the 10th day after activation, Fig. 6.



Fig. 4. Micro preparation. Series 2. Mixture of oral fluid and distilled magnetic sounded during 6 minutes water, examined on the 3rd day after activation. On the right: background is light, obvious crystallization. On the left: oral fluid is muddy, fragments of crystals. In the center: a belt is without crystals between liquids, formed as a result of the shift of impurities by magnetosonic waves to the periphery of the spot



Fig. 5. Micro preparation. Series 2. Mixture of oral fluid and distilled magnetic sounded during 9 minutes water, examined on the 3rd day after activation. On the right: background is light, obvious, perfect crystallization. On the left: background is muddy with fragments of crystals. In the center: a wide belt of separation without crystals between liquids was formed, the impurities were shifted by magnetosonic waves to the periphery of the spot. Exposure activation for 9 minutes is more effective than 3 and 6 minutes

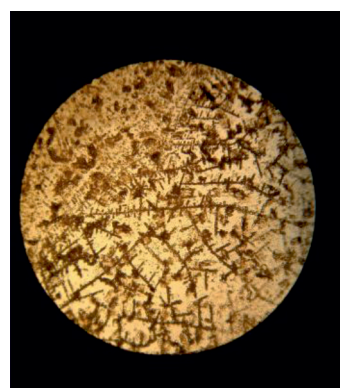


Fig. 6. Micro preparation. Series 2. Mixture of oral fluid and distilled magnetic sounded during 9 minutes water, examined on the 10th day after activation. On the right: background is light, the crystals are long, thin. On the left: background is dark, fragments of crystals. There is no belt between the liquids. The effect of magnetosonic water activation significantly decreased on the 10th day of observation

Contaminated oral liquid lost its physiological properties, the ability to form qualitative crystals, turned into a factor capable to initiate the development of tooth decay, inflammation of the gums. The effect of water transformation by sound energy, magnetosonic impact, its transmission of the oral liquid was visualized by crystallography. The effect of water activation by low-frequency sound increased by 3rd and decreased on the 6th day after exposure. Magnetosonic energy showed a synergy of

interaction, strengthening and increase in the duration of the activation effect up to 10 days. Effective were single exposures, taken for the research, especially 9 minutes. Activated water purified the oral liquid, crystallization was restored, sound or magnetosonic waves shifted the impurities to the periphery with the formation of a compressed sediment. The patient's scaling of the teeth lasted from 2-3 to 60 minutes. Sound, magnetosonic energy through water were transmitted to biological fluids, penetrated into the tissue fluid, saliva, blood, lymph, and spread throughout the organism. Trace reactions should be taken into account in indications for scaling of teeth with the use of physical factors. Basic scaling of the teeth is recommended to indirectly support with the rinsing of the mouth with activated water to prevent the formation of plaque and tartar, before and after a night's sleep and meal. For those who are working in enterprises with harmful working conditions is recommended to rinse the cavity more often, each 2-3 hours. It is recommended to brush your teeth with an electric sound toothbrush, using magnetic water once per day, toothpaste or tooth powder is not required, or can be taken in a minimal amount. Magnetosonic water can be used for procedures in hydrotherapy and phytotherapy, should be stored in a container wrapped in foil.

Conclusion

Contaminated oral liquid loses its physiological properties and the ability to form high-quality crystals. Crystallography of a mixture

of oral liquid and water visualized the effects, the duration of water transformation by sound energy and magnetosonic impact, and its translation to other liquids. Magnetosonic water retained new properties for a longer time, it cleaned the oral liquid better, restoring the formation of crystals than only sound distilled water. It is recommended to use activated water for cleaning the oral cavity, supporting effect of basic scaling of the teeth, for the prevention of pathogenic mineralization, for the treatment of gingivitis, periodontal diseases and oral mucosa, using in the form of irrigation, applications, baths, rinses, add to medicinal liquids.

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