Raman-fluorescence Spectroscopy Hygienic Assessment States oral Cavity and Principles Maintenance its Homeostasis.

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Purpose this work there was a development index of hygiene States oral cavity with the use of methods Raman-fluorescent lamp spectroscopy and on this basis creating conditions recovery options homeostasis the oral cavity that is disturbed at the hygienic stage processing (cleaning) teeth (mineralization).

On today's day the day is still here it is up to date the objective problem hygienic assessment States oral cavity .Indexes used currently time, take into account, mostly, hygienic status just one biotopopa – dental biotope, what doesn't allow it spend it comprehensive evaluation, since hygienic status oral cavity depends on States various biotopes (biotope lip, biotope gum, biotope teeth, biotope cheeks, biotope sky, biotope tongue and saliva), the list is different high-quality and quantitative microflora composition and different degrees their impact on maintenance homeostasis hygienic approach States oral cavity, including status mineralization serfs layers of enamel of the tooth(broken when cleaning teeth). In connection with with this, for objective Sano and pathogenetic status assessments oral cavity with its hygienic processing used it Express method Raman-fluorescent lamp spectroscopy. Conceptually, the article started with from the fact that the fluorescence method spectroscopy allows you to take into account all information aggregate aerobic and anaerobic microflora and organic the component dental plaque prevention biotopes of the mouth, a Raman component status the degree of mineralization hard tissue of tooth and saliva.On the basis of the developed technology was obtained integral and individual indicators(indexes) hygienic state mouth for 20 patients that allowed to develop objective Express digital integrated assessment methodology hygienic state mouth and sanogenetic tools and the method rehabilitation(recovery broken homeostasis mineralization hard tissue of the tooth).

Keywords: Dental paste; Enamel; Teeth; Hygiene; Mouth cavity; C pektroscopy; Fluorescence; Hygiene index; Hygienic status; Integral function digitized version hygienic assessment States oral cavity; Ramanovskaya street rating mineralization; Homeostasis,sanogenesis; Pathogenesis.

Purpose this work there was a designation problematic ones assessment questions hygienic approach States oral cavity and clinical working out possible ones algorithms their solutions with using the following parameters: modified us, high sensitive the Raman-fluorescent method spectroscopy. In a clinical setting research on

20 patients of able-bodied age age limit it is shown that the modified method Raman-fluorescent lamp spectroscopy allows you to conduct a comprehensive digital library Express indication and objective analysis hygienic approach States oral cavity based on Express registrations and analysis the whole set of aerobic-anaerobic

microflora and organic the component various biotopes of the cavity RTA(biotope teeth, lips, gums, cheeks, palate, tongue and saliva) and degrees mineralization surfaces solid fabrics teeth and saliva in on mode online. When instantaneous registrations on the hardware-software interface complex Inspector M Ramanovsky's and fluorescent lighting spectra of the studied substance object(respectively mineralization surface solid layers Caney of the tooth and microbe-containing organic component biotopes of the cavity RTA) were received integral functions indicators hygienic approach States oral cavity for 20 patients per day the norm that describes the as a hygienic solution status oral cavity in General, both separately taken biotopes in their relationships(fluorescent and Raman's components). This allowed to justify objective quantitative assessment methodology hygienic state mouth to implement individually sound her clinical applications with vyalenie biotope(habitats) mouth,which is the main source pollution(fluorescent component spectrum) and the state broken mineralization hard tissue tooth(Raman component spectrum) that demanded their sanogenetic value reabsorption (recovery homeostasis mineralization solid fabrics teeth) with preparations containing Gap.

Introduction

For diagnostics hygienic approach States oral cavity required objective monitoring all users etiological factors factors that are, as you know, possible risk factors development of caries and various her diseases [4,14]. (R.J. Geuco 1990).

On formation microflora oral cavity they may have an impact such factors how:

status the mucosa oral cavity, features structures (folds mucosa, gum pockets, slushy epithelium); temperature, pH, redox value potential (ORP) oral cavity; saliva secretion and its composition; condition teeth; composition food hygiene status oral cavity overall; functions salivation, chewing and swallowing; natural resistance of the organism (local and General, specific features and not specific immune factors). Each of these factors in various biotopes of the oral cavity cavities effect on the selection of microorganisms and it helps support homeostatic balance between bacterial populations [11,15].

One of the oldest evaluation methods hygienic approach States oral cavity is microbiological testing research according to the methodology V. F. Dobrynina. [6,7,9,10,11]. Disadvantages this method is his labor intensity, high costs time and place high cost, do not allow conduct survey large quantity patients. Exists and other famous ones evaluation methods hygienic approach States oral cavity (cited by data literary source 5):

1. Indexes hygiene characteristics dental area plaque: simplified hygiene index oral cavity Green-Vermillion for the RAID (OHI-S, Green-Vermillion, 1964), index Fyodorov-Volodkina Street (Yu. A. Fedorov, V. V. Volodkina,1971), ramfjord index (Ramfjord, 1956), efficiency index hygiene measures PHP (Podshadley, Haley, 1968), turesky index (S. Tureski et al. 1970), index Navy in modification Rustogi (Rustogi,1992);
2. Simplified ones hygiene indexes (reflecting only availability or lack thereof dental plaque formation on one or the other surface): dental index interdental plaques spans API (Lange, 1986), simplified dental index the RAID (O'Leary et al.,1972);
3. Hygienic measures indexes based on based on thickness estimation dental plaque, dental index Silness-Loe RAID (IPI Silness-Löe, 1964).

However modern ones literature data they bear witness what is presented methods are subjective (1,7), since it is practically in all cases the assessment is carried out ad oculus, have error of up to 200% when during the survey by various researchers, in some cases are not enough informative and are not comparable [5]. Except this is not enough methods do not allow make it up complete (in Russian relationships) the picture of hygienic States biotopes of the cavity mouth is normal and in case of pathology [16]. Submitted by problematic ones questions, naturally, demanded it your cover, clinical and technical support solutions.

In clinical practice Microbiology a fluorescent light source is described evaluation method hygienic approach States oral cavity [2]. In this work submitted by microbiological testing justification applications technologies fluorescent tube diagnostics as an objective one and adequate indication methods microbe-containing dental plaque prevention , saliva and hygiene products States oral cavity on this basis. In the scientific and clinical how did it happen work development Prof. Alexandrova street M. T. with co-authors: Method of detection oral hygiene mouth RU 2351274 C2. However in these variants implementations methods of its use reproducibility significantly depended on illumination level how to use it doctor, and his worker places? Fluorescent the technique wasn't there certified neither as a means measurements fluorescences, not as a dental treatment device (s as an indicator device).

Except Togo is low sensitivity the method was insufficient for objective information hygienic assessment mouth conditions (10x7-10x9 CFU per 1 gram dental plaque). Therefore, despite on the fact that these pionerskie streets works conceptually matched developed by the evaluation principle hygienic approach States oral cavity based on the application fluorescent lights technologies, methodologically and methodically they had insufficient information sensitivity and a large (not large systematic) measurement error (in investigation the above-mentioned reasons).Except this is not enough technologies they didn't take it into account impact of funds hygienic system processing options oral cavity on the possible violation homeostasis mineralization solid fabrics the tooth was not taken into account aftereffects this process. All this made it difficult implementation of the program necessary for dentists and patients Express methods. Only with the appearance of highly sensitive, without the specified parameters above the disadvantages, certified instruments and methods appeared a real possibility clinical implementations submitted by research (1,3,8).

Purpose offered research development has started modified, Raman-fluorescent, clinical the objective assessment method Express ratings hygienic approach States oral cavity based on registration and analysis of each from its biotopes (in the relationship) in norm (microbe-containing organic and mineral water partner).

Materials and Methods

With a goal definitions "worker" States level of hygiene oral cavity in patients, implementing agencies brushing your teeth(dental medium brush stiffness and tooth paste Colgate total) and various biotopes of the cavity mouth (biotope teeth, lips, gums, cheeks, palate, tongue and saliva) in the morning before and after it ,total by 3 min. each. Was conducted comparative information Raman-fluorescent lamp diagnostics level of hygiene oral cavity in 20 of the subjects studied without background information pathologies in the age from 19 to 45 years old, among which were 10 female faces and 10 male faces the floor. At the same time:

Criteria enabling features patients in the research groups – teeth present in the oral cavity.

Criteria exceptions patients from research groups: chronic generalized periodontitis severe degree severity; chronic diseases organs and systems at the stages of sub- and decompensation; acute and chronic conditions infectious diseases viral, bacterial infection and fungal nature (except for separate clinical patient with chronic stomatitis); reluctance participate in the study; pregnant women and nursing mothers; States, making it difficult productive contact: mental health disorders, alcoholism, blindness.

Instantaneous measurement intensity Raman-fluorescence's each biotope oral cavity and hygienic States RTA (GSR) at this stage based on the results inside each one patient groups (20 people -10 men and 10 women without somatic pathology) before, and after controlled brushing your teeth and all of the above biotopes (General time-3 minutes).

Measurements conducted with using hardware and software automated the complex (Agro-industrial complex) In Spectr M with light guide sensor with wave length probing device radiations 405 and/or 532 nm (device Raman - fluorescent lamp diagnostics-Figure 1).
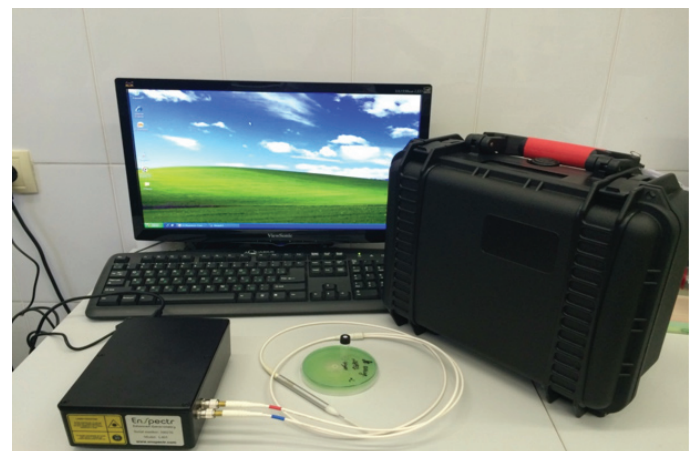

Figure 1: *Modifications device "Inspectr M" with optical fiber and with nozzles for works directly in the oral cavity, as well as with biological agents with liquids, smears and biopsies material.*

Agro-industrial complex Inspectrm co light-conducting nozzle with wave length 405 and/or 532 nm. [APK InSpektrM with a fiber optic nozzle with a wavelength of 405 and 532 nm.]

For analytical purposes and diagnostic information sensitivity it exceeds existing ones analogs in 10^4 -10^6 once-a Patent for invention RU 2526584 from 27.08.2014, Patent on the invention RU 2543691ot 10.03.2015], and corresponds to requirements clinical dentistry (certificate from 06.2011 №6361 and from 18may 2015 № RZN 2015\2419) in the conditions of mass production receiving patients.

Measurement method conducted using fiber sensor siting contact, stable perpendicular to to the object research with simultaneous check intensity fluorescence plaque and Raman intensity hard tissue of the tooth relative units(Figure 2), and, similarly, registration index fluorescence, integrally characterizing hygienic condition various biotopes cavity mouth (in relative units).
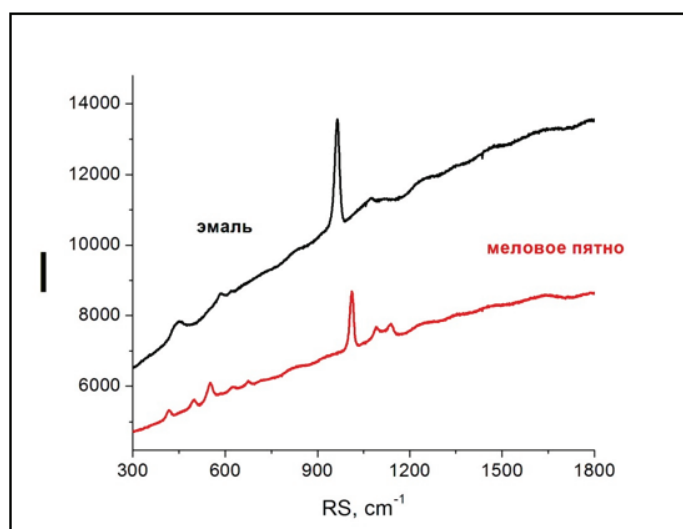

Figure 2: *Finding it the ramanovs lines of hydroxyapatites, Apatite calcium and fluorapatites in a chalk spot (this spot occurs with fluorosis) and in the enamel.*

Area under the spectral line the curve characterizes intensity fluorescences in the study area plot of a biotope (teeth), peaks describe intensity Ramanovsky's gap emissions, I. e. concentration Gap in the study area the area of the tooth and\or saliva.

Each one spectral line curve-Yes averaged value 100 Express measurements in the automatic in this mode. Time measurements of one points-5-10 seconds. The measurement error is not more than 2-3%. Spectrometer it has no moving parts that provides good reproducibility results. Result spectral analysis is displayed within a few days' seconds on the interface. Device data transmitted using USB portal, all of it information by measurement we see on the monitor computer (doctor and the patient).

Research conducted in the 3 stages

1. Confirmation concepts instantaneous registrations organic microbe-containing partners biotope(teeth) registration method fluorescences and mineral water the component tooth enamel (gap) –Raman's companion spectrum of the device

Inspector M.When this morning at the patients the state was measured mineralization tooth enamel (Raman spectrum) and status dental plaque prevention (fluorescent component spectrum) directly after chistkizubov (3 min.) and the next one day(morning after 24 hours) and the subsequent one per minute controlled their cleaning(5 minutes).

2. Justification informative content evaluation method hygienic approach States oral cavity method Raman-fluorescent lamp diagnostics.

3. Research efficiency applications remineralizing agents preparations () for sanogenetic therapy rehabilitation services mineralization solid fabrics tooth (enamel) that is broken brushing your teeth with a toothbrush and pasta.

For research perform measurements in various ways areas of biotopes oral cavity (contact person, stable, perpendicular to the map item research): 1). directly the most mouthful liquids using collected in aseptic methods conditions (not applicable stimulated oral liquid) to the standard version sterile 1.5 ml test tube in two stages, up to brushing your teeth and after cleaning teeth. Then -2) is carried out measurement Ramanovskaya Street and fluorescent the component Zubov -before and after cleaning (on the axis tooth-cutting machine edge, equator, and neck at the teeth Ramfjord. 3.4). Points of the biotope upper gums and lower:- mucosa gum lining between the teeth Ramfjord; 5,6) - mucosa transition shell upper creases and the lower lip in projection16, 26, 36, 46, and mucosa bridle shell lips; 7,8). Points of interest biotope of cheeks -for the right and left hand side left cheek conducted by three equidistant lines software measurements closing lines lips, respectively; 9). The point of the biotope language: - mucosa upper shell language - mucous shell. Median the furrow on level 2 premolar, - about limiting the furrows are distal regarding the tops of the language and the tip of the tongue; 10). Points of the biotope solid sky: in the tool area holes between Central banks incisors, - mucosa shell on border of solid and a soft sky (was measured accordingly lateral to the right, then to the left similarly and equidistant from sredinnaya street lines). Based on received averaged values digital values intensity fluorescences calculate integral functions hygiene indexes before brushing your teeth and after cleaning. Thus indexes are calculated by adding up all 10 land plots biotopes up to and after cleaning them.

When this is a formula for calculation they were characterized by how

I integral gig. = I gig. Before cleaning– I gig. After cleaning*I* gig. Up to cleaning•100% (1), where I is an integral gig. Integrally expressed as a percentage hygienic index status oral cavity in General, I gig. Before cleaning (after cleaning) amount indicators fluorescences biotopes.

I gig. 1-19% were considered how good it is hygienic status oral cavity, 20-50% satisfactory, 51-100% unsatisfactory; 101% or more very bad.

Similar thus, on the based on this the same formulas we were counting on it evaluated hygienic index States each of them biotopes: I gig. Biotope%=.I gig. Biotope before cleaning– I gig. iotopa after cleaning*I* gig. Biotope before cleaning•100%. (2)

For impact assessments each biotope as a percentage for hygienic use oral cavity overall calculation conducted by formula: I gig the final one.biotope's%=.I gig. Biotope in %\ I gig. All biotopes %(amount their %) •100%, (3)

Where I got the Giga final. Biotope% - Deposit in % of the subject biotope (biotope teeth, lips, gums, cheeks, palate, tongue and saliva) in I integral gig.

Where Hig - integrally expressed as a percentage hygienic index status oral cavity in General, and I _integrative teeth, etc – integrally expressed values indexes of hygienic quality States various biotopes of the cavity mouth.

If indicators made up 1-19%, considered hygienic status oral cavity a good one:
If indicators made up 20-50%, considered hygienic status oral cavity satisfactory:
If indicators made up 51% -100, counted hygienic status oral cavity not satisfactory; 101% and more-very bad.

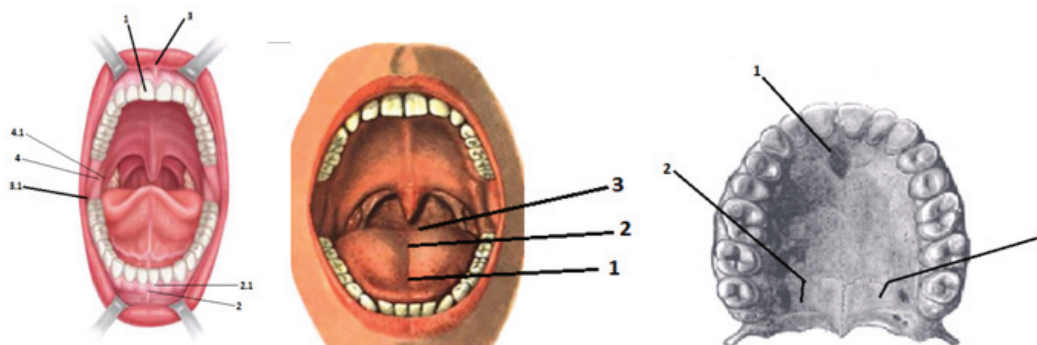Measurement for each point they did not less than three times.

Figure 3: Measurement schemes for individual users mouth biotopes

Everything research conducted in compliance with the requirements Helsinki declaration World medical association "Ethical issues principles of conducting scientific and medical research with participation human" and Ministry's order health care Russian Federation from 19.06.2013 № 266 " Rules clinical practices in Russian Federation" (conclusion The Committee for ethics of GBOU HPO South Moscow state medical UNIVERSITY of the Ministry of health Russia (Protocol No. 11 of 25.11.2014)) when availability of consent to participate in the scientific research.

Results and Discussion

Clinical features observations in groups up to and after: Research conducted with confirmation purpose informative content and objectivity modified version about the methodology.

STAGE 1...Results submitted by in table 1.

Neck Zuba	Source code mineralization level tooth(Raman)		y=3720, x=963 cm^{-1}	y=3559, h=963 cm^{-1}	y=160, h=963 cm^{-1}	Fluorescencez=4362
	Exposition in saliva 1 day		y=4593, h=963 cm^{-1}	y=4384h=963 cm^{-1}	y=209, h=963cm^{-1}	z=5351
	Cleaning dental paste	1min	y=3191, x=963 cm^{-1}	y=3061, h=963 cm^{-1}	y=129, h=963 cm^{-1}	z=4759
		2min	y=3252, h=963 cm^{-1}	y=3106 h=963 cm^{-1}	y=145, h=963cm^{-1}	z=3906
		3min	y=3261, x=963 cm^{-1}	y=3117, h=963 cm^{-1}	y=143, h=963 cm^{-1}	z=3853
		4min	y=3067, h=963 cm^{-1}	y=2926 h=963 cm^{-1}	y=140, h=963cm^{-1}	z=3639
		5min	y=3065, h=963 cm^{-1}	y=2880 h=963 cm^{-1}	y=184, h=963cm^{-1}	z=3632
Equator	Source the level of mineralization tooth		y=3360, x=963 cm^{-1}	y=2969, h=963 cm^{-1}	y=391, h=963 cm^{-1}	z=3965
	Exposition in saliva 1 day		y=5111, h=963 cm^{-1}	y=4302 h=963 cm^{-1}	y=808, h=963cm^{-1}	z=5921
	Cleaning dental paste	1min	y=3869, x=963 cm^{-1}	y=3458, h=963 cm^{-1}	y=410, h=963 cm^{-1}	z=4610
		2min	y=3883, h=963 cm^{-1}	y=3330 h=963 cm^{-1}	y=552 , h=963cm^{-1}	z=4508
		3min	y=3396, x=963 cm^{-1}	y=2991, h=963 cm^{-1}	y=405, h=963 cm^{-1}	z=4044
		4min	y=3358, h=963 cm^{-1}	y=2958 h=963 cm^{-1}	y=399, h=963cm^{-1}	z=3500
		5min	y=3548, h=963 cm^{-1}	y=3190 h=963 cm^{-1}	y=357, h=963cm^{-1}	z=3449
Cutting the edge of the enamel zubach	Initial level		y=4934, x=963 cm^{-1}	y=4404, h=963 cm^{-1}	y=529, h=963 cm^{-1}	z=6502
	Exposition in saliva 1 day		y=6539, h=963 cm^{-1}	y=5803 h=963 cm^{-1}	y=735, h=963cm^{-1}	z=8719
	Cleaning dental paste	1min	y=5787, x=963 cm^{-1}	y=5207, h=963 cm^{-1}	y=580, h=963 cm^{-1}	z=7129
		2min	y=5390, h=963 cm^{-1}	y=5301 h=963 cm^{-1}	y=88, h=963cm^{-1}	z=5989
		3min	y=5165, x=963 cm^{-1}	y=4705, h=963 cm^{-1}	y=459, h=963 cm^{-1}	z=5788
		4min	y=4381, h=963 cm^{-1}	y=3787 h=963 cm^{-1}	y=593, h=963cm^{-1}	z=5540
		5min	y=4205, h=963 cm^{-1}	y=3762 h=963 cm^{-1}	y=443, h=963cm^{-1}	z=5238

Table 1: Averaged Values indicators (M cf.) spectral lines characteristics teeth for various purposes anatomical and topographic features zones under the influence of saliva and remedies hygiene measures.

From the submitted form the tables should follow, what is the largest mineralization (by intensity Raman line (y=) at the wavelength spectrum gap lines h=963cm^{-1}) possesses enamel tooth (cutting tool edge), the smallest – the neck of the tooth. It is shown that application form saliva increases mineralization solid fabrics a tooth and b too time increases concentration dental plaque prevention (by its intensity fluorescence). And most importantly, in all cases usage toothbrushes and toothpaste results in significant demineralization solid fabrics teeth (up to 50%). This the phenomenon requires reviews existing ones technologies their hygienic value processing and additional information there are no specific applications for it remineralizing agents preparations for quick access recovery options strength tests characteristics the tooth (its mineralization).

In connection with this, we decided to explore impact remineralizing agents means (films and suspension) on mineralization tooth enamel.

Results measurements integrated intensity fluorescences biotopes of the cavity mouth before and after (\) cleaning(hygienic processing): Biotop-Guba upper 0.240 0.257 0.235/0,202 0,209 0,203;- the lower Lip 0.318 0.337 0.236/0,283 0.286 0.274; - Language 0,343 0,313 0,355/0,193 0,177 0,189;- Sky 0.214 0.212 0.211/ 0.214 0.201 00,204; - Cheek left 0.409 0.429 0.440/0.401 0.405 0.429; - right Cheek 0.478 0.402 0.428/0.407 0.429 0.385; - gum bottom 0.204 0.229 0.216/0.164 0.161 0.164; - upper gums 0.37171 0.303 0.382/0.178 0.219 0.243; - Teeth (1-top) 1,052 1,383 0.873/0.575 0.943 0.799; - Teeth (2-lower) 1,404 1,422 1,491\ 0.248 0.242 0.247;- Saliva 0,263 0,288 0,231/0,149 0,133 0,152 .

Average value of all indicators intensity fluorescences biotopes of the cavity before cleaning your mouth (Rel. units): 3, 065; after cleaning -1,885 - 0,303045.

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Index hygienic approach States oral cavity (formula 1) in General, I gig. = 38.499% which corresponds to satisfactory hygienic approach the state. Average values for each of them biotopes (Rel. units) before and after cleaning (\): Lips 0.270\ 0.242; - Tongue 0.337\ 0.186; - Palate 0.212\ 0.206; - Cheeks 0,432\ 0,409; - Gums 0,284\ 0,188; - Teeth 1,270 /0,509; - Saliva 0,260\ 0,145.

Indexes hygienic approach States (% - formula 2) separate biotopes (I gig. biotope %).): Lips 10.40-. Good; Language 44.80-Satisfactory; Palate 2.83-Satisfactory; Cheeks 5.32-Good; Gums 33, 8-Satisfactory; Teeth from 59.9 - Unsatisfactory; Saliva 44.2-Satisfactory. The most polluted is a biotope teeth, which allows you to count it the main source pollution oral cavity (u patients without presence of pathology oral cavity).

When analyzing it degree of influence individual biotopes of the cavity RTA (: I gig final.biotope %) on General hygiene status oral cavity (defined by by the formula 3) it is revealed that the largest negative influence on it provide dental biotopes(29.76%), tongue(22.26%) and saliva(21.96%) ,the smallest-palate (1.40%), cheeks(2.64%) and lips(5.18%) that corresponds to clinic data .

When evaluating influence of hygiene policy processing options solid fabrics the tooth method Raman-fluorescent lamp diagnostics received confirming results negative impact used in the provided field clinical explore hygienic measures methods used in the mineralization surface layers of enamel the tooth. That confirmed it urgent no need applications follow-up sanogenetic therapy remineralizing their therapies.

Map item research N=20	Top peak (intensity signal's in maximum/ length the waves in maximum	Bottom level (intensity signal's in minimum/length the waves in maximum).	Intensity Raman /absolute values units	The intensity fluorescence
To cleaning	y=7878, x=963 cm^{-1}	y=7418, h=963 cm^{-1}	y=460, h=963 cm^{-1}	y=7467
Enamel – monitoring After cleaning	y=3200, h=963 cm^{-1}	y=2952, h=963 cm^{-1}	y=248, h=963 cm^{-1}	y=3950
Enamel application form plates with natural with calcium	y=7239, h=963 cm^{-1}	y=6920, h=963 cm^{-1}	y=319, h=963 cm^{-1}	y=5937
Enamel after the application suspensions 30% with nano-gap	y=3493, h=963 cm^{-1}	y=3156, h=963 cm^{-1}	y=337, h=963 cm^{-1}	y=4139

STAGE 3.

Results submitted by in table 2.

Map item research N=20	Top peak (intensity signal's in maximum/ length the waves in maximum	Bottom level (intensity signal's in minimum/ length the waves in maximum).	Intensity Raman / absolute values units	The intensity fluorescence
To cleaning	y=7878, x=963 cm^{-1}	y=7418, h=963 cm^{-1}	y=460, h=963 cm^{-1}	y=7467
Enamel – monitoring After cleaning	y=3200, h=963 cm^{-1}	y=2952, h=963 cm^{-1}	y=248, h=963 cm^{-1}	y=3950
Enamel application form plates with natural with calcium	y=7239, h=963 cm^{-1}	y=6920, h=963 cm^{-1}	y=319, h=963 cm^{-1}	y=5937
Enamel after the application suspensions 30% with nano-gap	y=3493, h=963 cm^{-1}	y=3156, h=963 cm^{-1}	y=337, h=963 cm^{-1}	y=4139

Table 2: Results Raman-fluorescent light research effects of exposure hygiene products dental treatments on the extent of their mineralization.

Andz submitted by results it can be seen that after brushing your teeth mineralization level surface layers of enamel the tooth has shrunk by 53.9%; after application plates natural resources with calcium and suspension nano-gap level mineralization increased on average by 130%. This fact it is important clinical value as in science, so and in the application the app.

Like this in a similar way to submitted by research justified objectivity hygienic assessment States oral cavity based on modified using the method Raman-fluorescent lamp diagnostics, which is enough widely used in dentistry [1,3,8,17]. This will allow to a dentist make up treatment plan and conduct sanogenetic therapy prevention hygienic approach States hard and soft tissues of the cavity rtana based quantitative measures Raman-fluorescent lamps digital indicators, registered ones and analyzed data in on mode line on principle feedback.

Conclusions

1. Submitted by results confirm generally recognized provisions on that the most important role in treatment and prevention dental caries and its complications assigned individual and professional training oral hygiene mouth and this process depends on composition of the oral cavity liquids and level of hygiene States kazdogo from biotopes of the cavity the problem is their relationship [18].

2. Suggested price the methodology is clinically oriented and allows you to simultaneously investigate, register and conduct quantitative evaluation analysis hygienic approach States biotopes (integrally and separately organic microbe-containing and mineral water partner) in a screening service and monitoring service in automatic mode registration and storage results research. This is a main one different from traditional ones evaluation methods hygienic approach States the oral cavity. Oral cavity, including, apparently, and if available removable and non-removable removable orthopedic devices structures and implants.

3. Presented indices universal they can be compared between in dynamics, the helps doctor to trace the road to recovery, to evaluate the effectiveness of sanogenetic hygienic instrumental and drug support all of the mouth, using received data.

4. Visibility views automatically registered users, processed, rendered objects and definitely understood digital results research will contribute to wide implementation submitted by medical information technologies express ratings hygienic approach States cavities in the interests of the patient and the doctor.

Author declares that absence conflict of interest interests. Usage materials articles are possible only with permission by the author or with mandatory link results research received by the author.

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