Experimental Estimation Of "Denta Aloe" Efficiency In The Complex Treatment Of Sutton’s Aphthae

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Abstract. The problem of diseases of the oral mucosa covers a wide range of issues. Despite numerous studies, etiology, pathogenesis, clinical presentation, treatment of this pathology is not fully permitted. The current most widely used medical term is "recurrent aphthous stomatitis" or simply "aphthous stomatitis". Historically, many different terms have been used to refer to recurrent aphthous stomatitis or its sub-types, and some are still in use. Synonyms for major RAS include Sutton's ulcers (named after Richard Lightburn Sutton), Sutton's disease, Sutton's syndrome and pariadenitis mucosa necrotica recurrens. The incidence of the disease ranges from 10 to 40%, according to WHO, 20% of the population is affected. Currently, the etiology and pathogenesis of this disease are not fully established and, despite the variety of studies conducted in our country and abroad, remain the subject of numerous discussions. Microscopic and histological studies of the "Denta Aloe" preparation were carried out in the histological laboratories of the Republican Pathological Center, the staining of the micropreparations was performed using hematoxylin and eosin dyes.

Key words: microscopy, histology, dental preparation "Denta Aloe", stomatitis, oral mucosa, erosion, Sutton’s aphthae.

1. INTRODUCTION.

The problem of diseases of the oral mucosa covers a wide range of issues. Despite numerous studies, etiology, pathogenesis, clinical presentation, treatment of this pathology is not fully permitted. [1].

Many lesions of the oral mucosa are characterized with the development of the wound process, the course and outcome of which depend on many factors: the localization of the wound, the state of general and local immunity, the degree of microbial contamination, the virulence of the microflora present and the methods of therapeutic measures [2-5].

Over the past decade, the problem of prevention and treatment of chronic diseases of the oral mucosa has received considerable attention from researchers (Leontyev V.K. et al., 2000; Voronin V.F. et al., 2000; Samoilov K.O. et al., 2004; Yanochkina NS, 2006; Sarap LR et al 2007; Vaillant L., V. The Fontes, 2002, to Scully the C., Porter the S 2007; Aminabadi of N. A 2007, Kamilov Kh.P., Ibragimova M.Kh., 2019; Alimova D.M., 2017.) This is primarily due to an increase in the negative impact on the human body of immunosuppressive environmental factors, wide and not always justified use of medicines with antibacterial
properties (Maksimovsky Yu.M. et al., 2003; Savichuk N.O. et al., 2003; Jotwani R. et al., 2001; Bergdahl J., M. Bergdahl et al, 2001; Orosz M, Sonkodi I., 2004; Islam MN et al., 2007). In routine clinical practice, patients presenting for dental diseases using the oral mucosa, represent one of the most difficult problems in dentistry because of the difficulty in diagnosis and treatment (Storck C., 2000; Akman A. Et al., 2007). The problem is further complicated by the fact that to date, no measures for communal prevention of diseases of oral mucosa have been developed (Kuzmina E.M., 2001) [6-15].

Chronic recurrent aphthous stomatitis (RAS) is a chronic inflammatory disease of the oral mucosa and is characterized by the appearance of aphthae, occurring with periodic remissions and frequent exacerbations [16-18].

Sutton’s aphthae are characterized by tropism of solitary ulcers to small salivary glands. A completely different nosological affiliation is aphtosis, which is considered as variants of Behcet’s disease. [19-25]. Sutton’s aphthae predominates in women. The filtrate is located around the small salivary gland. Relapses are frequent. Paresthesia of the mucous membrane, sometimes localized lymphadenopathy, subfebrile temperature, edema, more often of the tongue, mucous membrane are precursors [25-28]. The clinical course, inflammatory, undulating, there is substantial deformation of the mucosa. The number of defeats is from two to ten. A creeping ulcer is characterized by healing at one pole, with progression at the other. The size can start from 1 cm to the destruction of significant areas of the mucous membrane. Favorite localization is the mucous membrane covered with stratified squamous non-keratinized epithelium. With the development of an ulcer, a zone with keratinizing epithelium can be captured [29-32].

Sutton’s aphthae are characterized by a secondary element, which arose from the nodule, which was affected by the superficial central necrosis. Merging aphthae form a deep ulcer with undermined and infiltrated edges. There are ulcers up to two months, which do not disappear without a trace, leaving a scar. A feature can be called a chronic persistent course [33-35].

Sutton’s aphtha is usually solitary, on a broad basis. When localized on the cheeks and lips, the crater-like tissue defect becomes flattened as it heals, filled with granulations from the periphery, and becomes similar to aphtha. The mucous membrane of the cheeks and lips is edematous, pale in color with some marbling due to thickening of the epithelial cover, slightly bumpy to the touch [36-38].

Sutton's aphtosis is most severe in HIV-infected patients [39].

The cytological picture of cellular elements in chronic recurrent aphthous stomatitis is characterized by certain features: the cytological composition of smears in patients with aphthous surface is represented by cells of slightly altered epithelium and a small number of leukocytes, with the formation of ulcers - epithelial cells are less common, the number of leukocytes with noticeable dystrophic changes increases sharply [40-43]. According to the data, three stages of the pathomorphological process of RAS have been identified: a) at the depigmented stage of the erythematous spot, intercellular edema is noted, the destruction of intercellular contacts, cytolysis. The membrane structure is damaged in epithelial cells. There is edema in the subepithelial base, the fibrous structure is destroyed; b) at the erosive-ulcerative stage - necrobiotic and necrotic processes occur, in this stage the leukocyte infiltrate is most pronounced; c) at the stage of healing, functional activity of epithelial cells is noted, and therefore the epithelium regenerates. The primary element of the lesion in this disease should be considered a vesicle formed as a result of vacuolar degeneration of epithelial cells [44-45].

The rapid recovery of the mucous membrane in case of its diseases determines not only the clinical, but also the aesthetic results of treatment, thereby exerting a serious influence not only on the functional, but also on the social quality of life. Tissue regeneration is a cascade
and multicomponent morphofunctional process, provided by complex cooperative interactions of cellular elements, which explains the interest of comparative analysis of modern treatment methods. Thus, in order to improve the quality of life, prevent mucosal diseases, and increase the clinical effectiveness of therapeutic manipulations, it is necessary to study the effect of the drug on the regenerative properties of tissue [46].

Rational and effective treatment of various forms of diseases of the oral mucosa, in particular chronic recurrent aphthous stomatitis, is an urgent and difficult task in the practice of a dentist[47]. The multifactorial nature of the development of the disease, the chronicity of the process, difficulties in achieving positive results of complex treatment, the emergence of resistant forms of microorganisms require the creation of new drugs for the local treatment of lesions of the oral mucosa, which must meet a number of requirements: ease of use, value for money, safe in application. Also, the action of which should be aimed at reducing the microbial factor and having an anti-inflammatory, membrane-stabilizing, metabolic effect, promoting the synthesis of proteins, related to microcirculation and regeneration processes, without side effects and allergic reactions[48].

In this regard, it was relevant to study in a microscopic and histological study of a children's dental preparation, in the form of a powder for the prevention and complex treatment of inflammatory and dystrophic-inflammatory diseases of the oral cavity.

Designed in the Scientific - Research Chemical - Pharmaceutical Institute of Uzbekistan drug, code-named "Dent Aloe" is intended for the treatment of inflammatory dental diseases.


Objective of the research:
Pathomorphological analysis of changes in the tissues of the oral mucosa under the influence of the drug "Denta Aloe".

Active ingredients and composition:
in 3 g of "Denta Aloe":
Active substances:
Aloe (Aloe arborescens mill) - 1.0;
Menthol (Mentol) - 0.05;
Excipients:
Sodium chloride (Natrii chioridum) - 0.54;
Sodium bicarbonate (Natrii hydrocabonas) - 1.4;
Sodium benzoate (Sodium benzoate) - 0.01 g;

2. METHODS OF RESEARCH.

The clinical study was carried out on the basis of the Department of Hospital Therapeutic Dentistry of Tashkent State Dental Institute. A comprehensive dental examination and
subsequent treatment of 23 patients with recurrent aphthous stomatitis at the age from 20 to 45 years were carried out. For each patient, a special card was entered into which passport data were entered, complaints, anamnesis of the disease and life, as well as indicators of objective examination: external examination, examination of the oral cavity, were often resorted to using additional research methods (index assessment of dental status), the final diagnosis was made. Anamnesis of the present disease included finding out the time of the onset of complaints and the appearance of erosions and ulcers on the oral mucosa. The causal factors of the emergence of elements in the patient's opinion were established, the frequency of relapses was clarified, as well as whether the disease was previously treated and what methods and means were used. Particular importance was attached to the identification of occupational hazards, and the use of medications, as well as the presence of concomitant somatic pathology.

Examination of the oral cavity was carried out in a dental chair using a standard set of dental instruments under artificial lighting. At the same time, attention was paid to the state of the oral mucosa, its color (anemic, pale pink, hyperemic, icteric, cyanotic), the degree of moisture (dry, wet, adhesion of a spatula and frothing of saliva, matte shade), localization of lesion elements (including primary and secondary pathological elements), as well as on the features of the bite, the depth of the vestibule of the oral cavity, the attachment of the frenum, the condition of the gums; filled in the dental formula, ascertained the presence or absence of soft and hard dental deposits, calculated the value of the hygienic index.

Edema of the oral mucosa was detected, as evidenced by the imprints of teeth on the cheeks and lateral surfaces of the tongue.

Assessment of the dental status consisted of determining the intensity of dental caries and the hygienic state of the oral cavity. Removable and non-removable orthopedic structures were carefully examined, attention was paid to the materials used for their manufacture and their combination.

The macroluminescent method was used to make the final diagnosis. With a healthy oral mucosa, the surface shone with a pale bluish-violet color. In the presence of inflammatory phenomena, a pronounced violet glow was recorded, with erosion of the oral mucosa had a dark brown one. With keratosis, a yellow glow with a dull tint was observed.

Microscopic and histological studies of the "Denta Aloe" preparation were carried out in the histological laboratories of the Republican Pathological Center, the staining of the micropreparations was performed using hematoxylin and eosin dyes. When viewing and describing the micropreparations, an electronic binocular microscope CYAN was used. Model DN -30 OM. With an attachment 34 MP MICROSCOPE Camera, ocular-objective magnification from $x = 4\times10\times0.5$, $x = 10\times0.25\times0.5$, $x = 40\times0.65\times0.5$. 75 (seventy-five) micrographs have been prepared and described on this topic.

3. EXPERIMENTS AND RESULTS.

During clinical observation, a pronounced therapeutic effect was noted in all patients with chronic recurrent aphthous stomatitis, which was noted on 4–13 days. This was expressed in a decrease in the intensity of inflammation, in the active epithelization of the elements of disruption, a decrease in pain and discomfort, a decrease in the severity of intoxication, an improvement in the general condition of patients and the normalization of the psycho-emotional status.

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<th>Complaints</th>
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Table 1. Dynamics of patients' complaints
Before treatment, all patients complained of pain and discomfort in the oral cavity, aggravated by ingestion of irritating food, 87% noted a burning sensation in the mucous membrane, 85% - tightness, 57% complained of increased salivation. Treatment of patients led to the complete disappearance of complaints by the 5th day.

Complaints of discomfort, pain while eating and talking were reported by 100% of patients, the presence of "ulcers" in the oral cavity - 89%, dryness in the oral cavity - 5%. 37% of patients noted the presence of similar complaints earlier, 63% of patients had complaints for the first time.

The intensity of the pain syndrome depended mainly on the number of lesions and localization.

When collecting anamnestic data, no concomitant somatic pathology was identified. When examining the oral cavity, all subjects were found to have aphthae, soft to the touch, painful on palpation, located against the background of a hyperemic spots of a round or oval shape, covered with a fibrinous grayish-white bloom, which was not removed when scraping, when the plaque was forcibly removed, the resulting epithelial defect bleed ...

In 54% of patients, some swelling of the oral mucosa was found, the color of the mucous membrane was pale pink, in 46% the surrounding mucous membrane was unchanged. And 15% of patients noted increased salivation, 1% - dryness of the oral mucosa.

All patients had regional lymphadenitis: the lymph nodes were enlarged, mobile, painful, soft-elastic consistency.

When examining the oral cavity in 40% of patients, aphthae were localized on the mucous membrane of the transitional fold, in 30% - on the mucous membrane of the lateral surface of the tongue, in 24% - on the mucous membrane of the lips, in 4% - on the mucous membrane of the cheeks, in 2% - on the mucous membrane of the retromolar region, in 2% - on the mucous membrane of the soft palate.

In 33% of patients, small single aphthae were found from 3-4 mm to 1 cm in diameter, slightly painful, covered with fibrinous plaque, changes in the general state of the body were not observed.

In 67% of patients, sharply painful aphthae, covered with fibrinous plaque, with significant infiltration at the base, from 5 to 11 mm in diameter, were found to be sharply painful when touched.

In 5% of cases, the patients showed changes in the general condition of the body, manifested in subfebrile temperature, malaise, decreased appetite, irritability.

The dynamics of patients' complaints is directly related to the processes of epithelialization of lesions on the oral mucosa. Thus, by 10.3 ± 1.2 days of observation, complete epithelialization of aft was noted.

The intensity of dental caries according to the DMF index was 10.81 ± 0.6. In patients with RAS of oral mucosa, the constant "D" was equal to 3.78 ± 0.6 (35% of its value), the constant "F" was 5.66 ± 0.6 (52%), the constant "M" was 1.37 ± 0.04 (13%). The level of intensity of dental caries was found to be high in patients with RAS (DMF was 0.37 ± 0.06).

The OHI-S index in patients with HRAS before treatment was 2.14 ± 0.06, i.e. the hygienic condition of the oral cavity before treatment was on average satisfactory, after the course of
complex etiopathogenetic treatment of RAS, the hygienic condition of the oral cavity improved significantly OHI-S - 1.21 ± 0.09 (good hygienic condition of the oral cavity), the hygiene index significantly decreased \( p < 0.001 \).

The complex periodontal index (CPI) in the group of patients admitted for treatment for HRAS was 1.96±0.031, in the control group the CPI was 1.83±0.023. After the complex treatment, the oral mucosa in patients with RAS was 1.41±0.075.

When microscopic examination in sections after a burn injury is inflicted, stomatitis arises from direct damage to the oral mucosa after 24 hours as unfavorable factors. It has an acute alterative-exudative character. When this is visible ulceration and total alteration local character with necrosis and destruction of the epithelium submucous- stromal tissue characteristic perifocal reactions as desquamation of the epithelium, stromal edema and loosening, it infiltration polymorphocellular leukocytes, dramatically enhanced vessels with increased permeability of small blood vessels, perevascular edema and erythrodiaapedesis, there are single vesicles filled with serous fluid, surface epithelial cells partially and locally deflated epithelium, in places anesthetized, pierced with fibrin threads.

Especially in the bottom of the burn ulcers there is a fibrinous exudate that penetrates to the muscle layer, in this place the underlying vessels are sharply hyperemic. At 4-6 day around the ulcer has lymphohistiocytic cells to produce macrophage phagocytosed cells.

Considerably fibrinous exudate retained camping on a surface defect thermal burn, but there is a tendency to the formation of granulation tissue, composed of young connective - tissue cells, fibroblasts, which have a plurality of small capillary formations and microcirculatory elements, they are hyperemic, in places with moderate sludge phenomena with aggregations of erythrocytes, proliferation and differentiation of epithelial cells and cells of hematogenous and histiogenic origin can be observed.

On the 14-16th day of the experiment, the microscopic picture of local changes is limited, while it is noted that the process of formation of granulation tissue is preserved, there is also a reaction of microcirculatory vessels with perivascular edema and macrophage and lymphocytic reactions, which are of a perifocal nature. In the affected areas of the mucous membrane, a reaction of proliferation of epithelial cells is noted, they, due to regeneration, cover the bare areas of the underlying tissue, while there are signs of moderate metaplasia of the superficial epithelium. There are areas of pronounced proliferation and differentiation of young connective tissue cells with the formation of fibrocytes, with a well-defined stroma and fibrous elements with a decrease in vascular elements. It should be noted in the stroma there is a tendency for focal accumulation of lymphocytic and histiocytic infiltration, as well as a delicate connective tissue scar at the site of thermal damage to the tissue.
**Figure № 1:** The site of the oral cavity after the application of a burn injury resulting from direct damage to the mucous membrane after 24 hours. The nature of the damage has an acute alterative-exudative with the formation of an ulcer (erosion). Desquamation of the mucous membrane, the stroma is bare. (Coloring Hematoxylin-Eosin. Uv. X20).

**Figure № 2:** The first 24 hours after a burn injury. A fragment of the oral mucosa, alteration of a local nature with necrosis and destruction of the epithelium with desquamation, the stroma is edematous, loosened. Total infiltration by neutrophilic leukocytes. Reaction of microcirculatory vessels, erythrodiapedesis, fibrin soak to its own layer. (Coloring Hematoxylin-Eosin. Uv. X20).

**Figure № 3:** On 4-6 days of the experiment. A fragment of an area of the oral mucosa with an acute (erosion) ulcer of the superficial epithelium, around the defect there are fogacitating
cells, fibrinous exudation along the edges of the ulcer, there is a tendency to the formation of granulation tissue consisting of young connective tissue cells, fibroblasts, which have many small capillary formations and microcirculatory elements. (Coloring Hematoxylin-Eosin. Uv. X40).

Figure № 4 а: On the 14-16th day of the experiment, the microscopic picture of local changes is limited, there is the formation of granulation tissue, a pronounced reaction of the microvasculature, in the affected areas of the oral mucosa, a reaction of proliferation of epithelial cells is noted. There are areas of pronounced proliferation and differentiation of young connective tissue cells with the formation of fibrous elements. (Coloring Hematoxylin-Eosin. Uv. X20).

Figure № 4 b: At the beginning of the 14-16th day of the experiment, the process of formation of granulation tissue is sharply expressed, in the focus of burn erosion there is moderate lymphocytic-macrophage infiltration, in the stroma of many vessels of a microcirculatory nature, perevascular and interstitial edema. There are areas of regeneration of the integumentary epithelium. (Coloring Hematoxylin-Eosin. Uv. X20).
**Figure No. 5:** On the 14–16th day after the burn injury, the changes are local. In the affected areas of the mucous membrane, a reaction of proliferation of epithelial cells is noted, in the process of regeneration, bare areas of the underlying tissue are covered, moderate metaplasia of the integumentary epithelium. In the stroma there is a pronounced proliferation and differentiation of young connective tissue cells with the formation of fibrocytes., A decrease in vascular elements. (Coloring Hematoxylin-Eosin. Uv. X20).

**Figure №6:** The mucous membrane of the oral cavity at the end of 14–16 days after the application of a burn injury at the site of acute erosive changes, a delicate connective tissue scar is formed, traces of moderate serous exudate. The stroma is a picture of connective tissue formation, fibroblasts and fibrocytes. There are fields with the formation of fibrous (collagen) structures, microvessel hyperemia was not found. (Coloring Hematoxylin-Eosin. Uv. X20).
Figure №7 a: Fragment of the oral mucosa. The final period of the experiment is marked by restitution (complete regeneration) of the integumentary epithelium. Dental powder for rinsing the mouth "Denta Aloe" has an anti-inflammatory and wound healing effect. Due to the biostimulation of cells, the activation of the metabolic process, recovery, healing with proliferation, transformation, and differentiation of cells is achieved. (Coloring Hematoxylin-Eosin. Uv. X20).

Figure №7 b: Fragment of the oral mucosa. The final period of the experiment is marked by restitution (complete regeneration) of the integumentary epithelium. Dental powder for rinsing the mouth "Denta Aloe" has an anti-inflammatory and wound healing effect. Due to the biostimulation of cells, the activation of the metabolic process, recovery, healing with proliferation, transformation, and differentiation of cells is achieved. (Coloring Hematoxylin-Eosin. Uv. X20).

4. DISCUSSION.

In this way the results of microscopic analysis of experimental data and can mark come to the following conclusion that the studied drug: "Dent aloe" - dental powder for a mouthrinse, a combined preparation for topical application. Provides anti-inflammatory, local anesthetic and improves the regeneration of tissues in the oral cavity, can be used for the
prevention and complex treatment of inflammatory and dystrophic - inflammatory diseases of the oral cavity.

Recommendations
Dental powder for rinsing the mouth cavity "Denta Aloe" has anti-inflammatory and wound healing effect. During biostimulation, excitatory vital activity of cells is formed in the cells, due to which the activation of the metabolic process and the process of restoration and healing of tissues with proliferation, transformation and differentiation of cells of hemato- and histiogenic origin (complete regeneration) of the integumentary epithelium is achieved.
Aloe extract and other components have an anti-inflammatory and reliable wound healing effect.

REFERENCES:


