been 2 (4.34 ± 3.00%) versus 3 (6.52 ± 3.64%) (P>0.05); the occurrence ratio for desquamative glossitis, respectively, is 1 (2.17 ± 2.15%) versus 2 (4.34 ± 3.00%)(P>0.05).

Table 3: Prior-to-treatment and follow-up CPITN indexes in the treatment and control groups (M ± m).

Sextant count	Group type (prior to treatment)			Group type (follow-up)		
	Treatment gr., n=46	Control gr., n=46	P	Treatment gr., n=46	Control group n=46	P
0 - healthy	2.10 ± 0.09	2.28 ± 0.09	>0.05	3.5* ± 0.16	2.7 ± *0.11	0.05<
1 - bleeding	1.502 ± 0.06	1.40 ± 0.06	>0.05	1.40* ± 0.05	1.20 ± *0.05	0.05<
2 - tartar	0.9 ± 0.04	1.0 ± 0.04	>0.05	0.6* ± 0.013	0.8 ± *0.034	0.01<
3 - GP ≥4-5 mm	0.8 ± 0.03		>0.05	0.2* ± 0.018	0.5 ± *0.080	>0.05
4 - GP≥6.0 mm	0.6 ± 0.02	0.7 ± 0.03	>0.05	0.3* ± 0.013	0.5 ± *0.022	0.01<
X - excluded	0.10 ± 0.004	0.1 ± 0.003	>0.05	0.2 ± 0.008	0.3 ± 0.0013	0.05<

Note: * P<0.05 relative to the prior-to-treatment value.

The combined treatment has resulted in lower occurrence of lip disorders. For example, the post-treatment intensity of lip allergies in tobacco growers is 2 (4.34 ± 3.00%) versus the respective intensity value observed in the control group 5 (10.87 ± 4.59%) (P>0.05); the occurrence of eczematous lip damage is 1 (2.16 ± 2.15%) versus 2 (4.34 ± 3.00%) (P>0.05), and the occurrence of non-healing chapped lips is 1 (2.16 ± 2.15%) versus 2 (4.34 ± 3.00%) (P>0.05) (Table 4).

Mean total effectiveness of the decline in the oral mucosa and lip disease occurrence was more than 25.3% higher in the treatment group than in the control group.

Combined treatment has had a positive effect on the studied clinical and functional characteristics of the oral cavity (Table 4).

Combined treatment has contributed to much higher oral care indexes; following the treatment, OHI-S index in the treatment group reaches 2.31 ± 0.09 versus 3.82 ± 0.14 (P<0.01) in the control group. The optimal health care activities have resulted in higher tooth enamel mineral density.

In the treatment group, tooth enamel's acid resistance has reached 32.5 ± 1.48% versus 48.5 ± 2.31% (P<0.01) in the control group; electrical conductivity is down by 1.02 ± 0.04 μA in the treatment group versus 1.8 ± 0.07 μA (P<0.01) in the control group.

Treatment has helped gum capillaries regain strength to a greater extent in the treatment group, and a Schiller–Pisarev index is 50.25 ± 2.42 in the treatment group versus 66.32 ± 3.03 in the control group; the proportion of Kulazhenko test results is 40.21 ± 1.65 versus 33.75 ± 1.33 (P<0.01) respectively.

Mean total effectiveness of normalization of follow-up clinical and functional indexes of oral health was 40.77% higher in the treatment group than in the control group.

Table 4: Occurrence of oral mucosal diseases in both groups prior to and after treatment (M ± m).

Occurrence of oral and mucosal diseases	Prior to treatment, group type			After treatment, group type		
	Treatment gr., n=46	Control gr., n=46	P	Treatment gr., n=46	Control gr., n=46	P
Stomatitis total	20/43.48 ± 7.31	21/45.65 ± 7.34	>0.05	5/10.87 ± 4.59*		0.05<
Including: allergic	8/16.70 ± 5.50	9/19.56 ± 5.85	>0.05	3/6.52 ± 3.64*	6/13.04 ± 4.97*	0.05<
Chronic recurrent aphthous stomatitis	4/8.70 ± 4.16	4/8.70 ± 4.16	>0.05	1/2.17 ± 2.15*	2/4.34 ± 3.00*	0.05<
Oral candidosis	5/10.87 ± 4.59	5/10.87 ± 4.59	>0.05	2/4.34 ± 3.00*	3/6.52 ± 3.64*	0.05<
Leikoplakia total	6/13.04 ± 4.97	5/10.87 ± 4.59	>0.05	2/4.34 ± 3.00*	3/6.52 ± 3.64*	0.05<
Including: common	2/4.35	1/2.17 ± 2.15	>0.05	1	-	0.05<
Hyperkeratosis	4/8.70 ± 4.16	4/8.70 ± 4.16	>0.05	1/2.17 ± 2.15*	2/4.34 ± 3.00*	0.05<
Erosive/ulcerative	-	-	>0.05	-	-	0.05<
Allergic glossitis	5/10.87 ± 4.59	4/8.70 ± 4.16	>0.05	2/4.34 ± 3.00*	3/6.52 ± 3.64*	0.05<
Desquamative glossitis	4/8.70 ± 4.16	4/8.70 ± 4.16	>0.05	1/2.17 ± 2.15*	2/4.34 ± 3.00*	0.05<
Lip damage total	12/26.09	11/23.91 ± 6.28	>0.05	3/6.52 ± 3.64*	6/19.04 ± 4.97*	0.05<

Allergic	8/17.40 ± 5.50	8/17.40 ± 5.50	>0.05	2/4.34 ± 3.00*	5/10.87 ± 4.59*	0.05<
Eczematous	4/8.70 ± 4.16	3/6.52 ± 3.64	>0.05	1/2.17 ± 2.15*	2/4.34 ± 3.00*	0.05<
Chronic chapped lips	3/6.52 ± 3.64	3/6.52 ± 3.64	>0.05	1/2.17 ± 2.15*	2/4.34 ± 3.00*	0.05<

Note: the numerator is the absolute value; the denominator is the percentage of the num-ber of subjects per group; P>0.05 relative to the prior-to-treatment value.

Recovery of oral organs' and tissues' functions is accompanied by recovery of the taste analyzer's performance, and it has been observed through a positive taste analyzing dynamics, which is statistically more pronounced (P<0.05) in the treatment group. For example, the severity of disorders resulting in poor perception of the sweet taste is 15 (32.61 ± 6.91) in the treatment group versus 24 (52.17 ± 7.37) (P<0.05) in the control group; for the salty taste, it is 14 (30.43 ± 6.78) versus 20 (43.48 ± 7.31) (P<0.05) respectively; for the sour taste it is 17 (36.96 ± 7.11) versus 26 (56.52 ± 7.31) (P<0.05); for the bitter taste it is 16 (34.78 ± 7.02) versus 23 (50.00 ± 7.37) (P<0.05) (Table 5).

Table 5: Effectiveness (%) of treatment based on the occurrence of oral mucosa disorders.

Indicators	Control group, prior-to-treatment effectiveness	Treatment group	
		Prior-to-treatment effectiveness	Effectiveness relative to control group
Stomatitis, total	52.38	75	>17.76
Allergic	33.33	60.96	>29.30
CRAS	50.12	75.06	>19.92
Oral candidiasis	40	60.07	>20.46
Leukoplakia, total	40	66.71	>20.46
Including: common	100	100	>0
Hyperkeratosis	40	75.06	>30.47
Allergic glossitis	25.06	60.07	>41.12
Desquamative glossitis	50.11	75.06	>19.43
Lip damage, total	45.46	75.01	>24.53
Including: allergies	37.53	74.94	>33.26
Eczematous	33.44	75.06	>38.36
Chronic chapped lips	33.44	66.72	>33.23
≤ total			>328.80
MCP			>25.30

In the treatment group, total median effectiveness of the taste analyzer's recovery is 25.93% higher than in the control group.

Inclusion of sensibilizing therapy in the combination therapy administered to the treatment group was followed by a decreasing regularity of morphological endonasal tests, which was more significant in the treatment group.

Particularly, in a follow-up endonasal examination, 15 (32.6 ± 6.91%) subjects in the treatment group tested positive for allergen M versus 25 (54.35 ± 7.34%) subjects in the control group; the respective allergen 2 ratio is 16 (34.78 ± 7.02%) versus 27 (58.70 ± 7.25%) (P<0.05).

Positive dynamics has been observed when checking the results of the sublingual test. So, in the treatment group, following the treatment, the intensity of positive response to Allergen 1 has been 12 (26.09 ± 6.47%), while in the control group - 28 (60.87 ± 7.21%) (P<0.05); the respective Allergen 2 ratio is 13 (28.26 ± 6.64%) versus 22 (47.83 ± 7.36%) (P<0.05).

Following the treatment, a dramatic decrease in the number of Hoigne-positive patients has been observed, and the respective ratio in the treatment group is 14 (30.43 ± 6.28%) versus 21 (45.65 ± 7.34%) (P<0.05) in the control group.

Mean total effectiveness of allergy test improvement procedures was more than 21.07% higher in the treatment group than in the control group.

The treatment has resulted in normalization of nonspecific resistance, which is more pronounced in the treatment group (Table 6).

Table 6: Effectiveness (%) of the treatment of the gustatory analyzer.

Tests	Control group, prior-to-treatment effectiveness	Treatment group	
		Prior-to-treatment effectiveness	Effectiveness relative to the control group
Endonasal			
Allergen 1	44.44	65.91	>19.46
Allergen 2	41.3	65.22	>22.45
Sublingual			
Allergen 1	39.13	73.33	>30.41
Allergen 2	51.11	70.45	>15.92
Hoigne's test			
Allergen 1	43.24	61.12	>7.13
≤total		105.37	
TME		>21.07	

Note: the numerator is the absolute value; the denominator is the percentage of the num-ber of subjects per group; P>0.05 relative to the prior-to-treatment value.

Following the treatment, the salivary lysozyme concentrations in the treatment group is 2.22 ± 0.09 μg/ml, which is statistically much higher than in the control group (1.63 ± 0.07 μg/ml (P<0.05)); likewise, ratios of neutrophils' phagocytic activity are 40.35 ± 1.71% versus 30.61 ± 1.42% (P<0.01); and the sIgA concentration proportion is 0.44 ± 0.02 IU/ml versus 0.31 ± 0.01 IU/ml (P<0.01) (P<0.01).

Also, the treatment has contributed to a fair reduction of the oral pathogenic bacteria titer. However, following the treatment, staphylococcus titers in the treatment group are 1.65 ± 0.07 lg CFU/ml, while in the control group it is 2.20 ± 0.10 07 lg CFU/ml (P<0.01); respective streptococcus concentrations are 2.31 ± 0.11 lg CFU/ml versus 3.42 ± 0.13 lg CFU/ml (P<0.01); a respective mold concentration is 1.27 ± 0.05 lg CFU/ml versus 2.00 ± 0.08 lg CFU/ml (P<0.05) (Table 7). The total median effectiveness of normalization of nonspecific resistance indexes was 37.98% higher in the treatment group than in the control group (Table 8). A comparative analysis of clinical effectiveness of the treatment is presented in Table 9.

Table 7: Nonspecific resistance of the oral cavity across the study groups prior to and after treatment (M ± m).

Indicators		Prior to treatment, group type			After treatment, group type		
		Treatment gr., n=46	Control gr., n=46	P	Treatment gr., n=46	Control gr., n=46	P
Salivary lysozyme, μg/ml		1.26 ± 0.05	1.27 ± 0.05	>0.05	2.22 ± 0.09*	1.63 ± 0.07*	<0.01
Phagocytosis by neutrophils		23.65 ± 1.02	24.31 ± 1.08	>0.05 >0.05	40.35 ± 1.71*	30.61 ± 1.42*	<0.01
IgA, IU/ml		0.26 ± 0.01	0.27 ± 0.01	>0.05	0.44 ± 0.02*	0.31 ± 0.01*	<0.01
Oral microflora	Staphylococcus	3.6 ± 0.12	3.57 ± 0.16		1.65 ± 0.07*	2.20 ± 0.10*	<0.01
	Streptococcus	4.20 ± 0.17	4.11 ± 0.19		2.31 ± 0.11*	3.42 ± 0.13*	<0.01
	Mold	2.7 ± 0.11	2.9 ± 0.13		1.27 ± 0.05*	2.00 ± 0.08*	<0.01

Note: * - P>0.05 relative to the prior-to-treatment value.

Table 8: Effectiveness (%) in regaining nonspecific resistance characteristics of the oral cavity.

Oral resistance characteristics	Control group, prior-to-treatment effectiveness	Treatment group	
		Prior to treatment effectiveness	Effectiveness relative to the control groiup
Lysozyme	44.09	60.32	>15.54
Phagocytosis by neutrophils	18.36	70.61	>58.73
sIgA	14.81	69.23	>64.78
Staphylococcus	38.37	54.17	>17.05
Streptococcus	16.79	45	>45.65
Mold	31.03	52.96	>26.11
≤total		227.86	
TME		>37.98	

Table 9: Clinical effectiveness (%) in the study groups.

Number of subjects	Outcome			
	Recovered	Significantly improved	Improved	No result
Treatment group (1), n=46	20 (43.48) ± 7.31	18 (39.13) ± 7.20	8 (17.39) ± 5.58	-
Control group (2), n=46	-	21 (45.6) ± 7.34	19 (41.3) ± 7.26	6 (13.1) ± 4.97

The effectiveness of treatment has been deemed as recovery in 20 subjects 43.48 ± 7.31% of the treatment group; no subject from the control group has recovered; respectively, the number of outcomes deemed as significantly improved totaled 18 (39.13 ± 7.20%) versus 21 (45.6 ± 7.34%); there have been no subjects with no results in the treatment group versus the control group with six subjects showing no results (13.1 ± 4.97%). It should be noted that intended influence on basic pathogenic mechanisms of oral and dental diseases in the treatment group has had a more pronounced effect in all research data groups.

The results of the study show that combined therapy with general (Opefera + Alcetra) and local (applying Hepolor to the oral mucosa) treatment has proved effective and can be applied to treat dental and oral diseases in tobacco growers.B The combined study has demonstrated that the new method is more effective than the standard therapy.

ETHICAL CLEARANCE

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CONFLICT OF INTEREST

Authors declare no conflict of interests.

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