

CHANGES IN THE MICROBIOLOGICAL PARAMETERS OF THE ORAL CAVITY CAUSED BY USING ELECTRONIC CIGARETTES

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Background.

Nowadays, the use of electronic cigarettes (EC) has become a very fashionable hobby of schoolchildren, and many teenagers who did not try smoking before develop interest in the new devices. The state of the local microbiota is affected by various factors, namely the temperature of the inhaled aerosol, the pH of the oral cavity, the nature of the diet, genetic and environmental factors, which can contribute to the development of oral dysbiosis, caries and periodontal disease.

Aim. This study was conducted to describe the oral microflora of rats exposed to EC.

Results.

The EC exposure stimulated depletion of commensal microbes' colonies in the oral cavity of the rats from the experimental group. A greater incidence of atypical species, such as *Klebsiella pneumoniae*, *Acinetobacter lwoffii*, *Candida albicans*, was observed in experimental group compared to control group at day 90.

The test of independence showed a statistically significant significance between the frequency distribution of opportunistic microbes and duration of EC exposure for *Klebsiella pneumoniae* ($\chi^2 = 8.017$, $p = 0.046$), *Candida albicans* ($\chi^2 = 8.689$, $p = 0.034$) and *Acinetobacter lwoffii* ($\chi^2 = 36.772$, $p = 0.001$).

Conclusion.

Our findings suggest that the aerosol formed by EC smoking changes the composition of the microflora. In the oral cavity, the number of pathogens increases, and the amount of normal microflora decreases.

Methods

30 ten-week-old WAG rats (female 76-81 g and male 86-94 g) were randomly distributed in two groups, as follows: Group 1 – control animals (n = 10); Group 2 – EC aerosol exposed (n = 20). EC aerosol exposures were carried out by using the Boyarchuck chamber. During study the rat oral microbiota were collected four times: at the beginning of experiment, on the 30-th, 60-th and 90-th days. Microorganisms were identified using standard microbiological techniques.

