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Bacteriological Effects of Xylitol and Different Carbohydrate Containing Diets in Swiss Albino Rats Inoculated with Streptococcus mutans CCUG 6519

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Abstract: The aim of the study was to investigate the bacteriological effects of different diets by Streptococcus mutans counts on 50 Swiss albino rats inoculated with Streptococcus mutans CCUG 6519 serotype c. A powdered form of standard basal diet meeting rats' nutritional needs was used in combination with diets containing different percentages of starch, sucrose and xylitol for 90 days. Dental plaque samples were collected at the end of the experiment and S. mutans and total bacterial counts were determined. S. mutans and total bacterial counts in plaque samples were the highest in the sucrose group and the differences were statistically significant ($p<0.001$). Similarly, caries lesions were higher in this group when compared with the others. The addition of 5% xylitol instead of 5% sucrose to the diet lowered the S. mutans counts, and the differences between the xylitol and sucrose groups were statistically significant ($p<0.001$). In addition, S. mutans counts and caries lesions were lower in the latter group. The addition of xylitol to diet decreased the number of S. mutans and caries lesions in rats, confirming that xylitol as a sucrose substitute cannot be fermented by S. mutans.

Key Words: Streptococcus mutans, Sucrose, Xylitol, Starch, Rat diet

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