Effect of probiotic white cheese on dental caries in rats: Microbiological and scanning electron microscopic study

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Abstract
Bacteriotherapy in the form of probiotic bacteria with an inhibitory effect on oral pathogens is a promising concept, especially in childhood. The aim of the present study was to investigate the effect of cheese formulations containing different probiotic strains on dental caries in rats, as well as their effect on streptococcus mutans.

Materials and Methods: Forty albino rats, weaned at the age of 21 days were fed a cariogenic diet for one week. They were infected on two consecutive days with streptococcus mutans culture to establish a caries active environment. Soft white cheese containing different probiotic strains (Lactobacillus gasseri B-14168, Lactobacillus rhamnosus B-445 and Lactobacillus acidophilus) were prepared. Rats were randomly assigned into five groups: Group I (negative control), Group II (white cheese control group) Groups III, IV, V (tested cheese with three different probiotic strains). The experiment extended for eight weeks. Caries scores were analyzed by Keyes’ method and level of streptococcus mutans was evaluated through oral swabs. Carious lesions were also examined under the scanning electron microscope.

Results: Animals fed cheese containing probiotic strains Lactobacillus gasseri and Lactobacillus rhamnosus showed the statistically significant lowest mean number of carious lesions. Scanning electron microscopic examination of animal’s molars in those groups showed areas of remineralization. In addition Streptococcus mutans counts significantly decreased in those two groups which suggest a direct antimicrobial effect of those strains. Lactobacillus acidophilus probiotic cheese showed comparable results to control white cheese as regards size and severity of carious lesions and Streptococcus mutans count.

Conclusion: Lactobacillus gasseri and Lactobacillus rhamnosus probiotic strains incorporated in cheese possess a cariostatic potential. They also affect the oral ecology by suppressing Streptococcus mutans.

Biography
Fatma A.M. Ramdan has completed her PhD at the age of 30 years from Cairo University. She was a director of food nutrition department in General Administration Girl in KSA. She has published more than 23 papers in the field of dairy science and technology.