

**EFFECTO DE LA LECHE BOVINA SOBRE LAS PROPIEDADES Y LA
CARIOGENICIDAD DE BIOFILMS DE *STREPTOCOCCUS MUTANS* EN
ESMALTE Y DENTINA RADICULAR**

**CECILIA DE LOS ANGELES MUÑOZ SANDOVAL
CIRUJANO DENTISTA**

RESUMEN

El objetivo de este estudio fue evaluar el potencial cariogénico de la leche bovina sobre biofilms de *S. mutans* y sobre la desmineralización de esmalte y dentina bovina. Biofilms de *S. mutans* UA159 crecieron sobre bloques de esmalte y de dentina, durante 5 días y 4 días respectivamente a 37°C, 10% CO₂. Los biofilms fueron divididos en grupos y expuestos a sacarosa 10%, leche bovina o lactosa 4,5% durante 1 minuto 8x/día. Al final de cada tiempo experimental, los biofilms fueron colectados para determinación de microorganismos viables, biomasa e polisacáridos extra en intracelulares. En los bloques dentales se evaluó el porcentaje de la pérdida de dureza superficial (%PDS). Los resultados mostraron para el sustrato esmalte que el grupo sacarosa 10%, presentó mayores valores para peso seco, proteínas totales, polisacáridos insolubles extracelulares, %PDS que los otros grupos ($p < 0.05$) y menores valores paramicroorganismos viables, que los otros grupos ($p < 0.05$). La acidogenicidad del biofilm del grupo sacarosa 10% fue mayor que los otros grupos en los tiempos 32, 56, 80 y 104 horas ($p < 0.05$). Con relación al sustrato dentina, el grupo sacarosa 10%, presentó mayores valores para peso seco, proteínas totales, polisacáridos insolubles extracelulares y %PDS que los otros grupos ($p < 0.05$). La acidogenicidad del biofilm del grupo control fue mayor que los otros grupos en los tiempos 32, 56 y 80 horas ($p < 0.05$). Concluimos que la leche bovina presento menor poder cariogénico que sacarosa 10% para ambos sustratos evaluados y que no presento diferencias cuando comparado con lactosa 4,5%.

Palabras Claves: Leche Bovina – Cariogenecidad – *Streptococcus mutans*.

ABSTRACT

OBJECTIVE: Although still debatable, bovine milk has cariogenic and anticariogenic properties due to lactose and protein composition, respectively. The objective of this study was, therefore, to evaluate the effect of milk on *S. mutans* biofilm composition and its effect on enamel and dentin demineralization.

METHODS: *S. mutans* UA159 biofilms were grown on enamel and dentin bovine slabs immersed in culture medium ultrafiltered tryptone-yeast extract broth containing 0.10 mM glucose. Enamel and dentine slabs (n=27) of known surface hardness (SH) were allocated to 3 groups of treatment: Group I: Sucrose 10% (positive control), Group II: bovine milk (test), Group III: 4.5% lactose (bovine milk concentration, active control group). Each biofilm was experimentally treated 8 times per day in triplicate. The experiments were carried out three times in three separated phases. After each phase, biofilms were collected and the values of dry weight, total protein, acidogenicity (pH), intracellular polysaccharides, soluble and insoluble extracellular polysaccharides were determined. SH of the slabs was again determined and the percentage of surface hardness change (%SHC) was calculated as indicator of demineralization. The difference between the treatment groups was assessed by ANOVA followed by Tukey test. **RESULTS:** In enamel, Group I (sucrose) showed significantly higher values of biomass, bacteria viability, total protein, insoluble extracellular polysaccharide, pH and %SHC than the other groups ($p < 0.05$). In dentin, Group I exhibited significantly higher values of: biofilm formation, total protein, insoluble extracellular polysaccharide, pH and %SHC than the other groups ($p < 0.05$). GII and GIII did not differ between them ($p > 0.05$) for any parameter, either for enamel or dentine. Dentine demineralization was higher than enamel ($p < 0.05$). **CONCLUSIONS:** These findings suggest that *S. mutans* biofilm formed under bovine milk exposure results less cariogenic than that formed from sucrose but this effect may not be due to milk anticariogenic properties.