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Inhibition activity of probiotic supernatants against the cariogenic *Streptococcus mutans*

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Statement of the Problem: Among the alternatives strategies to antibiotics are other antimicrobial substances like bacteriocins. However, since their production and purification is laborious and costly, an attractive approach is the administration of probiotic bacteria with bacteriocin-producing capabilities. These types of probiotic bacteria like *Lactobacillus rhamnosus* isolated from the intestinal tract and *Streptococcus dentisani* isolated from the oral cavity have been studied for diseases control. Therefore, the aim of this study was to determine the inhibitory effect of supernatants from *L. rhamnosus* and *S. dentisani* on *S. mutans*.

Methodology & Theoretical Orientation: Broth cultures of *L. rhamnosus* G G and *S. dentisani* 7746 were prepared with 100 nephelometric turbidity units and grown overnight to reach stationary phase. The cultures were centrifuged at 4000rpm for 10min, and the supernatants recovered and filtered to remove any bacteria cells. 100µl of each supernatant were added to 100µl of fresh culture of serotype c strains *S. mutans* UA159 and ATCC 25175 at 10^8 CFUs/ml in a 96-wells plate. Controls were 100µl of *S. mutans* strains with 100µl culture medium used for the growing of each probiotic bacteria (BHI for *S. dentisani* and MRS for *L. rhamnosus*). The 96-wells plate was incubated at 37°C inside a UV/V are spectrophotometry reader and the absorbance was monitoring at 600nm every 20minutes for 15h.

Findings: The supernatants of *S. dentisani* 7746 and *L. rhamnosus* GG present an inhibitory effect against the cariogenic strains *S. mutans* 25175 and UA 159. The inhibition with the supernatant of *L. rhamnosus* was immediate while with the supernatant of *S. dentisani* was significant after 3h (p=0.038, T-student).

Conclusion & Significance: The use of supernatants from probiotic bacteria *S. dentisani* and *L. rhamnosus* has an inhibitory effect against two strains of cariogenic *S. mutans*. Further studies are recommended with different supernatant concentration.

Biography

María del Pilar Angarita Díaz has a degree in Microbiology and Ph.D in Biotechnology. The knowledge in these topics has allowed her to contribute in the Faculty of Dentistry of the Universidad Cooperativa de Colombia, in different studies such as probiotics for caries prevention and control, and microbiologic analysis of dental material. She teaches in the area of the oral microbiology, knowledge that is enriched with the research.

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