Title: **EVALUATION OF *Pediococcus pentosaceus* ATCC 43200 GROWTH AND BIOPRODUCTION OF ANTIMICROBIAL COMPOUND IN DIFFERENTS GROWTHS SUPPLEMENTED BY POLYDEXTROSE, CARBON SOURCE SYNTHETIC WITH PREBIOTIC EFFECT**

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Abstract:

The pediocin synthesis by acid-lactic bacteria has been searched with the purpose of enable the safe industrial application of that bacteriocin to biologic conservation in foods. The demonstration of probiotic authenticity with strains from *Pediococcus pentosaceus* isolated was performed finding the pH gastric resistance, naturally acid, bile salts and the control of gut microbiota thru inhibition of pathogenic micro-organisms. Although, in food matrix the probiotics properties were restricted: the organic bioactive synthesis, those attributed organoleptics characteristics in food and bacteriocins production with attractive spectrum of microbial inhibition. That way, researches have followed the biosynthesis under different conditions of temperature, shake, carbon source and pH. The conduct to synthesis optimization of antimicrobial compound synthesis offer, in this study regarded those four variables reported. However, the polydextrose supplementation, source synthetic prebiotic, complement the evaluation, seeking to check the possible symbiotic effect. Four assays were performed in temperature of 35°C, some pH values, percentage of polydextrose and shake. Those were estimated, such as: maximum specific growth rate μ_{max}, acid lactic final concentration g. L^{-1} and antimicrobial activity by diffusion agar with indicators strains *Escherichia coli* ISO e *Listeria monocytogenes* 101. The polydextrose supplementation proposal of 0.5% in culture with pH 6 and shaked of 50 $_{rpm}$, furthered better cells growth and acid lactic synthesis, during the homofermentation. Comparatively with the same supplementation prebiotic percentage and temperature, shaked condition, in acidificated MRS broth. From these respected assays, the growth and acidification results rather significates were evidenced with 1.5% of polydextrose in neutral broth shaked at 150 $_{rpm}$. The antimicrobial activity has done through of the samples respective to majors two assays reported. The evidence of antimicrobial compound, it has showed from halos formation by samples derivative of broth, while the initial exponential phase until 12 hours. In this study, the both strains were susceptible. Although *E.coli* should be enclosed in bacteria Gram negative group with pediocin sensibility no such reported in most case, differently of anti-listerial activity. Very often, this has been reporting in biotechnological research.

Keywords: pediocin, *Pediococcus pentosaceus* ATCC43200, polidextrose, antimicrobial activity, supplementation.

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