Title: INFLUENCE OF CULTURE CONDITIONS ON ANTAGONISM EXPRESSION BY *Parabacteroides distasonis*

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Abstract:

Bacteriocins comprise a diverse group of antimicrobial peptides produced by a wide range of bacteria. These substances aroused great interest among the scientific community, both for its biological relevance, such as virulence ability, as for its potential biotechnological applicability. However, any practical application of this kind of substance must be preceded by several basic studies involving from the detection of the substance to the characterization of the synthetic protein. Because culture conditions interfere with the performance of bacteriocin production and even at laboratory scale, with the viability of the several steps required for the characterization of the substance, it is essential to optimize the parameters for cultivating the producer strain. This study was conducted to evaluate the antagonism expression by *Parabacteroides distasonis* using different incubation conditions. The producer strain recovered from broiler feces was grown in Brain Heart Infusion supplemented with hemin, menadione, and yeast extract at 37 °C, under anaerobic conditions. Variables evaluated were: a) incubation period, 24 or 48 hours; b) exposition or not to stress (oxidative and H_2O_2); c) cultivation of the producer strain together with the indicator strain previously killed by heat treatment. *P. distasonis* ATCC 1295 was used as indicator strain. Protein extraction was performed by precipitation with increasing concentrations of ammonium sulfate and intracellular extracts were employed for evaluation of antagonist activity by the overlay method. Antagonism was not detected when the producing strain was cultured for 24 hours, while the culture incubated for 48 hours showed activity correspondent to 100 UA/mL. Oxidative stress caused an increase in the title of the antagonist activity to 200 UA/mL. The other parameters evaluated did not affect antagonism expression. Data obtained suggested that the production of the antagonistic substance occurs mostly in a later *P. distasonis* growth phase. The observation of an increase in antagonistic activity under oxidative stress corroborates the well-established knowledge that the production of bacteriocin by Gram negative bacteria is stimulated under stress conditions.

Keywords: bacteriocin, antagonistic substance, *Parabacteroides distasonis*.

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