

TITLE: *In vitro* evaluation of probiotic properties of lactobacilli and their supernatants against *Gardnerella vaginalis*

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ABSTRACT: *Lactobacillus* are important microorganisms to vaginal health of women. This important genus is able to modulate the genital environment with lactic acid and other antimicrobials molecules preventing genital infections such as bacterial vaginosis (BV). *Gardnerella vaginalis* is one of the main pathogens of BV and alternative therapies with probiotics have obtained great success against genital infections. Thus, the aim of this study was to evaluate the functional and antagonistic properties of eight strains of lactobacillus isolated from cocoa fermentation against *G. vaginalis*. The probiotic potential of the eight strains, *L. plantarum* (03, 81, 90, 289), *L. casei* (24) and *L. fermentum* (29, 38), was evaluated using coaggregation capacity, percentage of hydrophobicity (n-hexadecane adhesion), cocultive, antimicrobial activity and acidification of supernatant assays. Our results show that lactobacilli have a potential for the use of probiotics. The strains studied demonstrated hydrophobicity rates ranging from moderate to high (56-86%). The metabolites secreted by the strains were able to interfere with the growth of *G. vaginalis*. Cocultive assay showed that all strains were able to decrease ($p < 0.05$) the growth of pathogen. Antagonistic activity revealed that all lactobacilli supernatant prevented the pathogen growth. Coaggregation capacity (21-34%) was low but present in all strains. In five strains, the metabolites produced had a pH below 4. This data could be related to the acidification capacity of the strains. The results obtained with the strains analyzed in the present study presented a potential for investment in activities such as probiotics. The elucidation of the antagonistic

mechanisms *in vitro* may be useful for further research and development of commercial product containing microorganisms or products secreted.

KEYWORDS: Bacterial vaginosis, autoaggregation, hydrophobicity, antimicrobial metabolites.

DEVELOPMENT AGENCY: CAPES.