TITLE: Evaluation of the physiological characteristics of lactic acid bacteria isolated from spontaneous cocoa fermentation

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ABSTRACT: The search for new probiotics is motivated by the knowledge that each strain of microorganisms possesses different properties and could have unique effects on human health. There are currently several studies evaluating lactic bacteria in probiotic products from fermented foods containing lactose or fermented vegetables that exhibit promising probiotic effects against various infections or in combination with treatments. Thus, the aim of this study was to evaluate the functional properties of eight strains of lactobacillus that was isolated during the fermentation of high-quality cacao. The probiotic potential of the eight *Lactobacillus* strains was investigated by autoaggregation capacity, percentage of hydrophobicity (n-hexadecane adhesion), growth under varied pH assay (pH 3, 4, 5, 6, 7 and 8) and heat tolerance assays. Our results show that *Lactobacillus* demonstrated hydrophobicity rates ranging from moderate to high (56-86%). The highest values were obtained with strain LP90. Although autoaggregation (13-31%) was low, all strains presented a positive response to the assay. Heat decreased significantly ($p < 0.05$) the population of lactobacilli, but they were all able to withstand the treatment. In the present study, only four strains failed to grow at pH 3. The strains LC24, LF38, LF47, LP81 and LP289 showed viability in all pH ranges. The lactobacilli used in this study demonstrated promising characteristics to characterize the strains as probiotics. These results may serve as a basis for future studies to investigate molecular mechanisms related to inhibition of pathogens, as well as to evaluate the immunomodulatory capacity of lactobacilli isolated from cocoa fermentation.

KEYWORDS: Bacterial vaginosis, autoaggregation, coaggregation, cocultive.

DEVELOPMENT AGENCY: CAPES.