TITLE: PREDICTING THE FUNCTION OF HYPOTHETICAL PROTEINS OF *Lactobacillus fermentum*

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The beneficial effects of lactic acid bacteria on the host, especially *Lactobacillus spp*. being these bacteria residing in the intestinal mucosa and in the human vagina, are responsible for several functions among them can be mentioned mainly the regulation of intestinal homeostasis, however, many biomolecules linked to this phenotype have not yet been elucidated. The function of a protein seems to be linked to its subcellular location and to the metabolic pathways. CELLO2GO is a publicly available Web server for tracking various properties of a target protein, such as molecular function, the cellular processes in which they are inserted, and the cellular component to which these proteins belong. As for subcellular localization, proteins can be predicted in the cytoplasm, plasma membrane or in the extracellular medium. In this sense, silico-chemical analyzes of properties and cell location prediction of *Lactobacillus fermentum* ATCC 23271 protein sequences were performed, which were not characterized. The CELLO2GO online server was used to predict the characteristics and sub-location of our proteins. From the 50 hypothetical sequences submitted to the server, 32 (49.2%) of the sequences were predicted in the cytoplasm, 24 (36.9%) proteins in the extracellular medium and 9 (13.8%) in the membrane. According to the characterization parameters, only 16% heard attribution of molecular function, 6% were related to cellular processes and 6% were denominated cellular components. Therefore, it is important to use other methods of computational analysis, such as the activity of protein secretion and even the signal peptide. It is a fact that syllogical analyzes of biomolecules are important to direct research in studies of functional characterization in vitro and in vivo with biotechnological prospection of proteins.

Keywords: *Lactobacillus fermentum*, hypothetical protein, cellular sublocalization, functional annotation.

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