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Ex Vivo Study of Laban's Role in Decreasing Hemolysis Crisis in G6PD-Deficient Patients

??? ??????: 01 ??????/????? 2020

Abstract

, the ingestion of vicine/convicine provokes an acute hemolytic anemia *Vicia faba* in spite of the vast nutritional and environmental benefits provided by fava bean (called favism in individuals with a glucose-6-phosphate dehydrogenase (G6PD) deficiency. The elimination of these glycosides is a goal that could be accomplished assay on human *ex vivo* using different processing methods including bacteriological treatment. Laban as a good source of lactic acid bacteria was tested in an blood samples in order to determine its capacity in decreasing the hemolysis crisis induced by the ingestion of fava beans. Results indicate a significant decrease in human blood cell hemolysis after the treatment of fava beans by Laban. This decrease in hemolysis was also correlated with the G6PD deficiency categorization. The highest hemolysis level (mean: $23.11 \pm 0.76\%$) was observed in samples with G6PD activity between 10 and 30%, while the lowest hemolysis level (mean: $5.75 \pm 0.64\%$) was observed in samples with G6PD activity more than 60%. This decrease was correlated with a high antioxidant capacity of Laban ($51.61 \pm 1.13\%$, $^{-1}$ expressed by the percentage inhibition of DPPH radical). The counts of isolates from MRS and M17 culture plates were 6.75 ± 0.095 and 7.91 ± 0.061 log cfu ml respectively. In conclusion, the synergy between the antioxidant properties of Laban and the possible decrease of vicine and convicine concentrations by *ex vivo* lactobacillus found in the fermented dairy products could explain the ability of Laban to reduce the hemolysis crisis

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