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POTENTIAL OF TRADITIONAL PULSES FROM PORTUGAL TO PROMOTE THE GROWTH OF PROBIOTIC STRAINS

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Pulses contain carbohydrates, proteins, minerals and vitamins which are essential requirements in the human diet. Therefore, these ingredients can constitute a very good source of growth factors and prebiotic components for probiotic strains. The main objective of this research work was to evaluate the ability of two traditional pulses in Portugal (broad beans and lupins) to support the growth of two probiotic strains: *Lactobacillus acidophilus* L10 and *Bifidobacterium animalis* subsp. *lactis* Bb12.

To achieve the objective of this work, a culture medium (Man Rogosa Sharpe (MRS) without glucose) was supplemented with different percentages of pulse flour (2, 3, 4 and 6%) and the growth and acidification profiles of the two probiotic strains was observed. MRS medium with glucose was used as positive control. Each medium was inoculated with 2% of each strain, homogenized and incubated at 37 °C for 48 hours. Samples were taken at 0, 4, 8, 12, 24, 36 and 48 hours of incubation and evaluated in terms of physico-chemical and microbiological properties.

The results obtained showed that the MRS supplemented with broad bean flour at different percentages supported the growth of *B. animalis* Bb12, but to less extent than the MRS with glucose. For MRS supplemented with lupin flour, the growth of *B. animalis* Bb12 was similar to that obtained in MRS with glucose regardless of the different percentages assayed. The observed growth with this strain was accompanied by a decrease in medium pH.

In the case of *L. acidophilus* L10, in both medium supplemented with broad bean, as well as that supplemented with lupin flour, independently of the percentages of flours, bacterial growth was maintained in the first hours of fermentation but then it decreased steadily thereafter; similar behavior was observed for MRS with glucose. A decrease of pH was scarcely observed and this is in agreement with the limited growth.

In conclusion, the preliminary results obtained in this work have shown that the pulses used may offer the possibility of improving the formulation of fermented beverages from both a nutritional and a bacterial growth enhancement perspective, giving an opportunity for innovation in the fermented product field as well as contributing to a more balanced diet given the high nutritional value of pulses.