**Blackcurrant improves fermentation times and probiotic survival rate in a mini yogurt prototype system**

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Dairy products containing probiotic bacteria are one of the most popular functional foods. To promote their beneficial effects, probiotics must remain viable during the shelf life of the product and throughout the gastrointestinal tract. On the other hand, blackcurrant (BC) and its associated compounds such as anthocyanins and other polyphenols, are known to possess several health benefits and a significant antioxidant capacity. Their proven antimicrobial effects against pathogenic microorganisms promote incorporation into dairy foods. However, the interaction between probiotics, BC and its influence in the manufacturing process have not been completely explored in yogurts. The primary objective of this work was the evaluation of the effect of BC using an experimental model based on a miniature scale yogurt prototype system (1 mL) where starter and probiotic strains are co-cultivated with or without 1% blackcurrant powder (*Ribes nigrum*). Fermentation kinetics were studied to find the optimal time for yogurt manufacturing, seeking a compromise between shorter times and the optimal cell count. Different formulations in the minature system were evaluated, finding a significant reduction of fermentation times in all of them. In particular, the 1% BC yogurts with probiotic strain *Lacticaseibacillus casei* BL23 (*L. casei*) were made in half the time of the control yogurts, without affecting the final bacterial count. BC addition did not change the 28-day survival dynamics of the starter strains whereas *L. casei* showed a progressive and significant increase in viability from day 14 of cold storage. Yogurt pH values around 4.6 remained constant from the first week while control yogurt reached lower values. There was also a significant decrease in the percentage of syneresis during storage compared to day 1. The incorporation of BC did not modify the viability of the probiotic species in the presence of gastric and intestinal juices, but it noticeably improved tolerance to intestinal juices with 0.1% bile salts. *L. casei* reached 5.22±0.01 log CFU/ml after in vitro gastrointestinal simulation. To summarize, the use of the mini yogurt system proved to be an optimal system to analyze microbiological and physicochemical parameters. The addition of BC allowed to reduce fermentation times practically by half, maintaining the quality of the yogurt and improving the viability of the probiotic strain and its tolerance to bilis. There is evidence in the literature that many polyphenolic compounds have the ability to alter the gene expression of proteases that could explain these changes. The results shown here on yogurts containing probiotics and BC are important since it is known that fermentation of foods may increase the extent to which polyphenols become available for use in biological processes.

Palabras clave: polyphenols, lactic acid bacteria, dairy food