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EFFET OF APPLE FIBER ON PROBIOTIC *L. CASEI* SURVIVAL DURING YOGURT PRODUCTION, STORAGE AND SIMULATED GASTROINTESTINAL TRANSIT

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Consumer interest in functional foods and probiotics, has increased in recent years. Dairy products, such as yogurts, fermented milks, and beverages, are considered ideal for delivering probiotic bacteria to humans, and have been part of the human diet for many years. However, to provide health benefits, probiotics should survive both in the food matrix during storage and through gastrointestinal transit after consumption. In the present study, probiotic yogurt with *Lactocaseibacillus casei* ATCC 393 was produced via fortification with apple fibers (0, 1, 2, 3% w/v). The number of *L. casei* cells during yogurt production and refrigerated storage (even after 28 days) was above the requirement of 10^6 cfu g⁻¹ ($10^8 - 10^9$ cfu g⁻¹) for microorganisms (other than the starter culture) added to yogurt according to FAO/WHO, and for probiotic food, according to the US FDA and the food industry. Of note, the number of yogurt starters during storage was higher than 10^8 cfu g⁻¹ for all formulations, which is higher than the established FAO/WHO requirement of a minimum number of viable cells of yogurt starter bacteria of 10^7 cfu g⁻¹ during consumption. Although no significant positive effect of apple fiber on the probiotic viability during storage was detected, the addition of apple fiber seems to have a beneficial effect on *L. casei* viability during simulated gastrointestinal conditions. More specifically, a slight decrease in the numbers of *L. casei* was detected during the simulated oral and gastric phase and a more significant one ($10^3 - 10^4$ cfu g⁻¹) during the simulated intestinal phase. However, in all yogurts a viability of $10^5 - 10^6$ cfu g⁻¹ after the simulated gastrointestinal conditions was observed. The results of this study suggested the efficiency of apple fiber to increase the survival of *L. casei* in yogurt during simulated gastrointestinal conditions.

Keywords: functional food, probiotic, L. casei, dairy products, apple fiber