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Probiotication of fruit juices (orange, sour cherry, plum and black chokeberry juice) by lactic acid fermentation

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Functional foods influence positively one or more biological function in the human body, improving the state of health and wellness and reducing the risk of developing diseases. This food category includes all products containing probiotic microorganisms. Fruit juices are healthy, having a high content of antioxidants, vitamins, minerals, dietary fiber and many other beneficial nutrients and hence could serve as a good medium for lactofermentation. Fermentation significantly reduces the sugar content improving their nutritional value and extending the shelf-life of fruit-based beverages. Consequently, it is worthwhile to investigate the development of a fermented product that combines the beneficial effects of lactofermented juices and probiotics. The aim of our study was to investigate the possibility of the probiotication of fruit juices (orange, sour cherry, plum and black chokeberry juice) by fermentation with probiotic starter culture. We investigated the fermentation properties of different *Lactobacillus* strains to find the most suitable probiotic strain(s) to produce a high added value fermented juice. It was observed that pH adjustment, nutrient supplementation and/or dilution of the juice are needed to reach the recommended cell density. By an appropriate, careful starter strain selection and adjustment of the fermentation parameters of fruit juice, could develop a minimally processed, probiotic, fresh-like functional juice as an alternative to dairy probiotic products, in which there are adequate number of living probiotic cells. It can maintain and/or enhance the polyphenol content and antioxidant activity of the raw material to promote the health of consumers. Due to the significant differences between the number of viable cells of certain *Lactobacillus* strains in the different juices, it is important to select the starter culture for the given raw material.