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Sensory and microbiological profile of frozen desserts prepared by incorporation of sea buckthorn berries supported probiotic cells

Antonia Terpou and Maria Kanellaki
University of Patras, Greece

Samples of frozen yogurt were prepared by the addition of *Lactobacillus casei* ATCC393 probiotic cells either free or encapsulated in sea buckthorn berries (*Hippophae rhamnoides* L.). As a control sample, frozen yogurt was prepared by the commercial yogurt culture (*Streptococcus salivarius* subsp. *thermophilus* and *Lactobacillus delbrueckii* subsp. *bulgaricus*) and compared with potentially probiotic frozen desserts. The viability of the encapsulated probiotic culture was evaluated, as well as the effect of free probiotic cells on the chemical and rheological properties of frozen yogurt during 90 days of storage. The counts of *L. casei* cells in frozen desserts prepared by encapsulated biocatalyst maintained constant after 30 storage days, while the frozen desserts with free bacteria showed a decrease of about 25% after 30 days and 40% after 90 days. The addition of the encapsulated biocatalyst increased the total solids content. All frozen desserts were characterized by good texture and pleasant aroma, specifically frozen desserts with incorporated biocatalyst was characterized by exceptional appearance and enhanced citrus aroma. The proposed bioprocess of employing sea buckthorn berries as a probiotic encapsulation carrier shows great potential in manufacturing application and commercialization of probiotic frozen desserts.

ant.terpou@gmail.com