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Utilization of the Strained Yoghurt Whey by Incorporating or Converting into Food Products

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Abstract

Strained Yoghurt Whey production has appeared as a global problem in recent years due to the rapid growth of the market demand for Greek-style yoghurt. The high BOD and low pH (4.5-5.1) limit the options for cost-effective solutions for utilization, disposal or further use of SYWhey. Nowadays, it is used as animal feed or in anaerobic digesters for energy production. Other value-added options include isolation of valuable components (proteins, lactose) and production of galactooligosaccharides. A very promising option is the utilization of SYWhey by incorporating or even converting into food products. The aim was (i) to use of SYWhey as a solvent during Osmotic Dehydration of fruits/vegetables and (ii) the incorporation of SYWhey into a fruit/vegetable based beverage. (i) Pumpkin cuts were immersed in OD solution containing pasteurized SY whey along with other solutes (glycerol, trehalose, oligofructose, ascorbic acid, sodium chloride, calcium chloride-w_{OS}:w_{fruit}=5:1) for 120min at 55 °C. OD process parameters (water loss, solid gain) and product characteristics (water activity, colour, texture, sensory properties, vitamin C, microbial growth) were measured, after processing and during storage (5 °C). The use of SYWhey as OD solvent was proven effective enhancing mass transfer phenomena (20% solid gain increase compared to Water). Osmosed samples were of high quality (increased hardness, vivid yellow to orange colour, high vitamin C, no microbial growth). The product was stable for 90 days at 5 °C supporting the applicability of SYWhey as a novel OD solvent for the production of innovative products of high nutritional value and fresh-like fruit characteristics. (ii) Avocados were blended with SYWhey, prebiotic fibers, vitamin C, salt, natural rosemary extract, and immediately cooled. The blended ingredients are packed in PET packages and High Pressure processed (600 MPa-25 °C-10 min). Physico-chemical (pH, water activity, viscosity, colour), nutritional (vitamin C), microbiological and sensorial analyses were conducted, after production and during storage (5 °C). The beverage was microbially stable and maintained its nutritional as well as quality characteristics characterized by vivid green colour, creamy and consistent texture and natural avocado taste. The shelf life was calculated based on the sensory quality as 120 days at 5 °C. The reintroduction of SYWhey into food supply chain is of utmost importance with significant effect on process

sustainability.

Keywords: acid whey utilization, osmotically dehydrated pumpkin, avocado based beverage