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PEACH PHYTOCHEMICALS AVAILABILITY DURING YOGHURT SHELF-TIME

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Fruit preparations can be added to yoghurt to create new products and combine the nutritional value of dairy and fruit matrices. Interactions of plant phenolics with proteins may lead to the formation of soluble or insoluble complexes. These interactions may have a detrimental effect on the *in vivo* bioavailability of both phenolics and proteins. The aims of this study were to evaluate the protein profiles of yoghurt before and after the addition of peach and to assess the phytochemical availability of fruit in presence of yoghurt, in order to evaluate the possible interaction between protein and phenolic compounds therein. Industrial peach preparates containing 50% of fruit, 0.19% aroma, 0.17% sweeteners, 2.3% starch, 0.07% citric acid and 0.15% hydrocolloids were incorporated in natural yoghurt and kept during 28 days at 2 °C. Extracts were obtained with methanol: formic acid (9:1 v/v) and stored at -20 °C for 1 h to facilitate protein precipitation. Extracts was centrifuged and supernatant filtered with 3 kDa membrane. Individual phenolics and carotenoids as well as proteins were analysed by HPLC-DAD; complementary, proteins profile was analyzed by SDS-PAGE and Urea-PAGE. The polyphenols identified in peach pieces used in formulations were (+)-catechin, *p*-coumaric acid, chlorogenic acid, neochlorogenic acid and rutin and all the compounds do not present significant differences between control peach formulations and peach enriched yoghurt. Carotenoids detected were zeaxanthin, β -cryptoxanthin and β -carotene, whose levels increased in control samples after 7 days at 2 °C by 128, 114 and 74%, respectively and then remained constant without significant changes. When the peach preparation was in contact with the yoghurt matrix, zeaxanthin levels increase 54% during the 28-day shelf-life period at 2 °C and β -cryptoxanthin and β -carotene concentration increased 78 and 100%, respectively during first 14 days and then decreased until day 28. After 28-day shelf-life period peach enriched yoghurt had less zeaxanthin, β -cryptoxanthin and β -carotene (61, 42 and 39% respectively) than the initial concentrations detected at day zero of yoghurt shelf-life time.

The decrease in carotenoid suggests a possible interaction of these compounds with the dairy matrix. The soluble proteins detected were α -lactalbumin present at 0.26 mg/ml that showed to be very stable throughout storage and even after peach addition. The β -lactoglobulin was quantified in control at 0.07 mg/ml and presents a significant decrease of 88% in peach yoghurt between days 14 and 28 of storage.

Free β -lactoglobulin and peach carotenoids availability decreased during peach yoghurt enriched shelf-life.

These results suggest that interactions between peach and yoghurt components may affect nutritional availability.