

Micro Biotec'13

PORTUGUESE CONGRESS OF
MICROBIOLOGY AND BIOTECHNOLOGY

6th - 8th December | Aveiro Portugal

Abstracts Book



OP01

EFFECT OF CONTROLLED ATMOSPHERE AND STORAGE TEMPERATURE ON THE PHENOLICS AND CAROTENOIDS OF PASTEURIZED PEACH PURÉES

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Modified atmosphere is a possible way to promote extension of the storage period and quality allowing the regular supply of industrial fruit matrices year-round and across the globe.

The aim of this study was to evaluate phytochemicals profile (focused on carotenoids and phenolic compounds) of pasteurized peach puree stored under reduced oxygen atmospheres throughout 90 days.

Peach (*Prunus persica* (L.) Batsch ‘Catherine’) purées were pasteurized at 90 °C during 5 minutes and then flushed with three different gas mixtures: 10% oxygen+90% nitrogen, 100% nitrogen and air during 3 minutes at 0.4 bar. Purées were stored in the dark under sterile conditions during 90 days at 4 and 23 °C.

Total antioxidant activity was affected by atmosphere with losses of 14 and 43% in air, 21 and 46% in 10% O₂+90%N₂, and 44 and 5% for 100%N₂, stored at 4 and 23 °C, respectively. Total phenolic content was not significantly affected by storage atmosphere conditions at both storage temperatures, decreasing less than 15% during the 90-day storage period.

Among individual phenolic compounds identified in peach stored at 4 °C, the levels of (+)-catechin, neochlorogenic acid and chlorogenic acid increased under 10%O₂+90%N₂, by 67, 13, and 14%, respectively. The different atmosphere conditions at 23 °C presented no effect in concentration of (+)-catechin and neochlorogenic acid but chlorogenic acid concentration at 10%O₂+90%N₂ showed a significant increase of 22%.

Total carotenoid content was affected by atmosphere with reductions of 53 and 75% in air, 69 and 79% in 10%O₂+90%N₂, and 41 and 67% for N₂, stored at 4 and 23 °C, respectively. In the individual carotenoids, at 4 °C, the levels of lutein+zeaxanthin, β-cryptoxanthin and β-carotene under 100% N₂ increased by 27, 18 and 59%, respectively, while at 23 °C their concentrations decreased by 44, 17 and 2%, respectively. Refrigerated storage conditions under 100% N₂ preserved better carotenoids than room temperature where atmospheric conditions make no differences.

These results suggest that phenolic compounds are relatively well preserved during storage of peach purée while carotenoid levels can undergo significant changes. Storage temperature is more relevant than atmosphere composition, but anoxic conditions (100% N₂) combined with refrigerated storage assure the best storage conditions for phytochemical preservation on peach purées to be used in food industry.