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The effects of hydrogen peroxide used for desulfiting on sensory texture vitamins and color of dried Malatya apricots

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In this study, it was aimed to investigate hydrogen peroxide (H2O2) used for desulfiting, effects on some properties of sulfured-dried Malatya apricots. Each sample of sulfured-dried apricots has been dipped in H2O2 solutions at different temperature and concentrations. For this reason, the solutions were prepared which contain 0.5% and 1% H2O2 at 10ºC, 20ºC and 30ºC temperatures. Each sample has been dipped into H2O2 solutions and waited for 5 minutes. In addition to this application, adequate portion of sample dipped into 0.5% H2O2 solution at 10ºC were taken for second dipping for one night. And this application has been called as double-dipping (DD) method. Apricots dipped in H2O2 solutions by seven different methods were investigated by comparing with non-dipped sample in relation of temperatures – concentrations (T-C).

SO2 content were determined by the modified Monier Williams distillation method. The surface color, Hunter L, a and b parameters, were determined using a Minolta Chromameter. The values of hardness, springiness, gumminess, chewiness, fracture force, stiffness as textural properties were determined by Lloyd Texture Analysyer. Sensory properties, appearance, texture and flavor characteristics were marked as sensorial properties. To test H2O2 residues, the semi-quantitative test strips were used. A test strip was immersed into homogeneate. The colour in the reaction zone of the test strip was compared with the colour scale and the formation of blue colour indicated the presence of H2O2. Total phenolics were analyzed by Folin-Ciocalteu method. Total reducing sugar contents were determined by Lane-Eynon method. β-carotene, and vitamin E contents were determined by HPLC, with 250 × 4.6mm Zorbax Eclipse XDB-C8 (5 µm) column. The mobile phase was methanol with a flow rate of 1 mLmin−1. Sample injection volume was 25µL and column temperature was set at 30 ºC. The detector was set at 292nm and 450nm for vitamin E and β-carotene respectively. Vitamin C analysis was made by UV-Spectrophotometer at 518nm with 2,6-dichlorophenolindophenol reagent.

According to the results, SO2 content was decreased by rising T-C. In spite of low T-C, DD sample showed the most SO2 decreasing. On surface color properties, high T-C and DD method raised Hunter L* and b* values, but reduced a* values of each samples. No changes were noticed on textural and sensory properties on treated apricots. Residual H2O2 was not detected on treated apricots. Total phenolics and total reducing sugar contents decreased with high T-C and DD agents. Vitamin C content decreased with H2O2 application, and degradation rate increased with 1% H2O2 concentration. β-carotene contents decreased so. DD sample and 30ºC applications indicated the highest β-carotene decrease in each other. Vitamin E contents have also decreased. As a result H2O2 treating at 10ºC temperature and 0.5% concentration is acceptable for dried apricots.

When all these results were evaluated, hydrogen peroxide was found to be an effective way to reduce the amount of SO2, total reducing sugars, total phenolic, vitamin E, β-carotene and vitamin C contents. It was determined that hydrogen peroxide did not cause any effect on the textural and sensorial properties. Although it reduces the amount of SO2 less than in other applications, apricots for the preservation of other characteristics of low T-C combination of hydrogen peroxide is thought to be more suitable for application in dry apricots. Since the hydrogen peroxide is a strong oxidizing, future studies may be considered to explore the effects on antioxidants and carotenoid fractions in apricot.