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Use of hydrogen peroxide to remove sulfur dioxide from over-sulfite dried apricots

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Turkey supplies 75% of the dried apricots (DA) consumed in the world. DA lose their characteristic golden yellow color L during storage due to browning reactions. Sulfuring is carried out to retard browning during drying and storage. Sulfuring is mostly accomplished by burning sulfur in an enclosed room and exposing fresh apricots to SO₂ fumes. DA sometimes contain much higher SO, levels (up to 6000 mg/kg) than legal limits (usually 2000 mg/kg). Therefore, it may become necessary to decrease the final SO, level in DA. In this study, H₂O, was used to reduce sulfite content of oversulfited DA. FDA classifies H₂O₂ as GRAS and permits its use for various purposes. However, residual H₂O₂ should be removed during processing. DA were dipped into 0.5–1.5% H2O, solutions at 20°-60oC for various times. No residual H,O, was detected in samples treated with H₂O₂. H₂O₂ was very effective in reducing SO₂ contents of DA. For example, at 1% H₂O₂ concentration at 40°C for 12 min treatment, SO, content of DA decreased from 4184 to 2138 mg/kg. Removal of SO, increased as H₂O, concentration and temperature increased. For example, at 20°C, 15% of total SO, was removed from DA treated with 0.5% H,O,, whereas decrease in SO₂ content was 31 and 42% at 1.0 and 1.5% H₂O₂ concentrations, respectively. Similarly, at 1.0% H₂O2 concentration for 10-min treatment, increasing temperature resulted in a considerable increase in the removal of SO,: 31% at 20°C, 47% at 40°C and 61% at 60°C. Results from reflectance color values showed that H₂O₂ treated DA had lighter, yellower and lower red color. The lower red color indicated the degradation of carotenoids. In conclusion, H₂O2 treatment was very effecting reducing sulfites from DA. Critical factors for H₂O₂ application are choosing appropriate H₂O₂ concentration and temperature without bleaching the natural color of DA.

Biography

Fatmagul Hamzaoglu completed her undergraduate studies in the Department of Food Engineering at Ankara University in 2013 and obtained Master of Science degree in the same department in 2016. She is currently working on her PhD in the same department since 2016.

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