

Oxidative Stability of Allergen Reduced Peanuts Treated by Alcalase

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This study evaluated the impact of protease treatments on the oxidative stability of raw and dry-roasted peanuts. The Runner peanut kernels were treated with Alcalase in phosphate buffer, then dried in a dehydrator for 18 hours. The dry peanuts were packed in a set of amber glass jars (50g/jar), capped, and stored at 37 °C in an incubator for 0-8 weeks. Controls are untreated raw and dry-roasted peanuts packed and stored in the same way. Samples were taken weekly to determine peroxide value (PV) and concentration of thiobarbituric acid reactive substances (TBARS) as indicators of oxidation (n=3). The aroma/odor of each sample was recorded at the time of sampling. Alcalase treatment greatly reduced the contents of major allergens Ara h 1, Ara h 2 and Ara h 6. The initial PV of untreated-peanuts was higher than that of Alcalase-treated peanuts ($P<0.05$) and increased faster during storage, while the PV of Alcalase-treated peanuts only increased slightly during storage. The initial TBARS of Alcalase-treated raw peanuts was slightly higher than that of untreated, but the TBARS of Alcalase-treated dry-roasted peanuts were slightly but lower than that of untreated ($P<0.05$). For raw peanuts, the TBARS of the untreated increased gradually but the TBARS of the treated remained unchanged until week 7. For roasted peanuts, the TBARS of the treated increased gradually but were lower than that of untreated from week 0 to week 8 ($P<0.05$). Old peanut smell was detected at week 5 and 6 for untreated raw and roasted peanuts, at week 7 for treated roasted peanuts, but not detected in treated raw peanuts.

The study indicates that protease treatment of raw and dry-roasted peanuts may not accelerate oxidation of peanuts during storage. More study of oxidative stability of protease treated peanuts stored in the presence of sufficient air is needed.