The Effect of Different Freezing Temperatures and Long-Term Storage on The Stability of Peaches

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Abstract

Freezing is a simple method to preserve foods especially fruits. The purpose of this research is to determine the impact of long-term freezing storage on peaches quality (physical and chemical attributes). Peaches *(Prunus persica)* were cut into 8 lengthwise slices and dipped in 2% of ascorbic acid for 2 minutes. The slices were then drained and packaged using Whirl Pak (Nasco). The bags were closed, and tab were folded over three times. Fresh and pre-frozen peaches treatments were placed randomly into freezers at different freezing temperatures (-7°C), (-12°C), (-18°C), (-29°C) and (-77°C) for 360 days. Quality measurements included freeze, thaw and weight loss, lightness, firmness, moisture content, pH, ascorbic acid equivalent antioxidant capacity (AAEAC), hexanal detection using gas chromatography (GC), scanning electron microscopy (SEM) and sensory evaluation. The results showed that -77°C and -29°C kept the quality of peaches samples after freezing. However, all samples enzymatically browned, therefore, frozen peaches are best used for applications where they can be used in the frozen state and before thawing. Freezing at -7°C had a negative impact on peaches quality. Fresh and pre-frozen peaches were no preferred by the sensory panelist's members after 270 and 360 days of frozen storage.

Keywords: Freezing, Peaches, Temperature, Quality, Antioxidant Capacity, Long shelf Life.

The Effect of Freezing Storage on The Quality of Atlantic Salmon

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Abstract

The purpose of this research is to determine the quality change in Atlantic Salmon stored in different freezing temperatures for 12 months. Salmon fillets were sliced into ~60g to 65g individual samples (length = 7.3 cm, diameter = 4 cm, thickness = 2 cm), packaged under vacuum and stored in the refrigerator (3 hours) while preparing all samples. Pre-frozen samples were also tested. The fresh and pre-frozen salmon were placed randomly at different freezers (freezer 1 = - 7°C, freezer 2 = -12°C, freezer 3 = -18°C, freezer 4 = -29°C and freezer 5 = -77°C for 12 months and sampled monthly. Quality measurements included freeze loss, thaw loss, weight loss, lightness (L*), thiobarbituric acid reactive substances (TBARS), volatile flavor composition (hexanal) (GC-MS), firmness, water holding capacity (WHC), scanning electron microscopy (SEM) analyses (surface pore numbers and size), moisture content, ash, protein and sensory evaluation. Freezers -29°C and -77°C were significantly better than other temperatures in keeping the quality attributes of salmon for 360 days. No significant difference between freezer -29°C and -77°C in weight loss in days 180, 270 and 360, pore size in days 270 and 360, water holding capacity, texture, TBARS, in days 90, 180, 270 and 360. No significant difference among all fresh salmon in protein content except day 180 while pre-frozen salmon was significantly different between freezer -7°C, -29°C and -77°C in days 0 and 30. The result indicated that -29°C is enough to keep the quality attributes of Atlantic Salmon for 360 days.

Keywords: Freezing, Atlantic Salmon, Temperature, Quality, Long shelf life.