

## Effects of Mild Heat Treatment on the Physical and Microbial Quality of Salak Apricot Cultivar

**Authors :** Bengi Hakguder Taze, Sevcan Unluturk

**Abstract :** Şalak apricot (*Prunus armeniaca* L., cv. Şalak) is a specific variety grown in Iğdir, Turkey. The fruit has distinctive properties distinguish it from other cultivars, such as its unique size, color, taste and higher water content. Drying is the widely used method for preservation of apricots. However, fresh consumption is preferred for Şalak apricot instead of drying due to its low dry matter content. Higher amounts of water in the structure and climacteric nature make the fruit sensitive against rapid quality loss during storage. Hence, alternative processing methods need to be introduced to extend the shelf life of the fresh produce. Mild heat (MH) treatment is of great interest as it can reduce the microbial load and inhibit enzymatic activities. Therefore, the aim of this study was to evaluate the impact of mild heat treatment on the natural microflora found on Şalak apricot surfaces and some physical quality parameters of the fruit, such as color and firmness. For this purpose, apricot samples were treated at different temperatures between 40 and 60 °C for different periods ranging between 10 to 60 min using a temperature controlled water bath. Natural flora on the fruit surfaces was examined using standard plating technique both before and after the treatment. Moreover, any changes in color and firmness of the fruit samples were also monitored. It was found that control samples were initially containing  $7.5 \pm 0.32$  log CFU/g of total aerobic plate count (TAPC),  $5.8 \pm 0.31$  log CFU/g of yeast and mold count (YMC), and  $5.17 \pm 0.22$  log CFU/g of coliforms. The highest log reductions in TAPC and YMC were observed as 3.87-log and 5.8-log after the treatments at 60 °C and 50 °C, respectively. Nevertheless, the fruit lost its characteristic aroma at temperatures above 50 °C. Furthermore, great color changes ( $\Delta E > 6$ ) were observed and firmness of the apricot samples was reduced at these conditions. On the other hand, MH treatment at 41 °C for 10 min resulted in 1.6-log and 0.91-log reductions in TAPC and YMC, respectively, with slightly noticeable changes in color ( $\Delta E < 3$ ). In conclusion, application of temperatures higher than 50 °C caused undesirable changes in physical quality of Şalak apricots. Although higher microbial reductions were achieved at those temperatures, temperatures between 40 and 50°C should be further investigated considering the fruit quality parameters. Another strategy may be the use of high temperatures for short time periods not exceeding 1-5 min. Besides all, MH treatment with UV-C light irradiation can be also considered as a hurdle strategy for better inactivation results.

**Keywords :** color, firmness, mild heat, natural flora, physical quality, şalak apricot

**Conference Title :** ICFBE 2018 : International Conference on Food and Bioprocess Engineering

**Conference Location :** Paris, France

**Conference Dates :** December 27-28, 2018