

## Standardization of preservation method and their combination for safe storage of pomegranate juice at room temperature

A.B. SURYAWANSHI, K.S. KIRAD, G.N. PHAD AND S.B. PATIL

Accepted : October, 2008

### ABSTRACT

The present investigation "Standardization of preservation method and their combination for safe storage of pomegranate juice at room temperature" was carried in the P.G. Research Laboratory, Department of Horticulture, Allahabad Agricultural Institute-Deemed University, Allahabad during the year 2006-2007. The experiment was laid out in 4 x 4 factorial with three replications. There were sixteen treatments comprising two factors with each of four levels. The treated juice was kept for 60 days of storage and physico-chemical characters were recorded from 0 days to 60 days of storage. In various levels of pasteurization minimum changes in T.S.S., acidity, pH, total sugar, reducing sugar and tannin were recorded with T<sub>2</sub>-70°C pasteurization while among the various levels of preservative the minimum changes were observed in P<sub>2</sub>- sodium benzoate at 500 ppm and in case of combination minimum changes were observed with T<sub>2</sub>P<sub>2</sub> - 70°C pasteurization + sodium benzoate at 500 ppm. Overall minimum changes were observed in chemical preservative than pasteurization.

See end of the article for authors' affiliations

Correspondence to:

**A.B. SURYAWANSHI**  
Department of  
Horticulture, Allahabad  
Agricultural Institute-  
(Deemed University)  
ALLAHABAD (U.P.)  
INDIA

**Key words :** Standardization, Preservation, Pasteurization, Pomegranate juice.

**P**omegranate (*Punica granatum* L.) a small fruit tree belongs to family puniceae. It is one of the favourite table fruits of tropical and subtropical regions where it has enjoyed the consumers patronage for its healthy dietetic and medicinal properties. It is considered a symbol of plenty and a basket of pomegranate was chosen as a symbol of plenty for the 18<sup>th</sup> International Horticulture Congress, held in 1970 (Singh, 1985). At present, pomegranate fruits are mainly used for table purpose, the freshly extracted juice of Ganesh pomegranate is light pink to pink coloured, mildly flavoured, sweet with refreshing and agreeable taste. The juice can be processed such as possibly into squash, syrup, nectar, jelly and such other products.

Preservation of fruit juice by heat is the most popular method. The method consists of essentially in heating the juice to 100°C or slightly below for a sufficient time to kill micro-organisms, which cause spoilage. While, pasteurization temperatures do not kill all the micro-organisms present in the juice. Some spores and spore bearing bacteria like *Bacillus subtilis* and *Bacillus mesentericus* can survive and multiply later. Pasteurized juice and squashes have a cooked flavour. After the container is opened they ferment and spoil within a short period, particularly in tropical climate. To avoid this, chemical preservatives are used. Chemically preserved juice can be kept for a fairly long time even after opening of the seal of the container. Sodium benzoate is a salt of benzoic acid and is used in the preservation of fruit juices

and squashes. The preservative action of benzoic acid increases in the presence of dioxide. A typical example is that of *Bacillus subtilis* which can not survive in benzoic acid solution in the presence of carbon dioxide, sodium benzoate is more effective against bacteria, yeast and moulds. The present investigation was, therefore, undertaken with a view to find out the most suitable combination of preservative for long storage of pomegranate juice at room temperature.

### MATERIALS AND METHODS

An experiment was carried out in P.G. Research Laboratory, Department of Horticulture, Allahabad Agricultural Institute-Deemed University, Allahabad during the year 2006-2007 for standardizing the effective method of preservation and their combination for safe storage of pomegranate juice. Pomegranate fruits of Mrig bahar were obtained from instructional-cum research orchard of the Department of Horticulture, Allahabad Agricultural Institute-Deemed University, Allahabad. The fresh fruits obtained from the garden were subjected to physico-chemical analysis as per the procedure. These fruits were employed for the juice extraction and extracted juice was treated with various levels of pasteurization viz. T<sub>0</sub>- without pasteurization, T<sub>1</sub>-60°C pasteurization, T<sub>2</sub>-70°C pasteurization, T<sub>3</sub>-80°C pasteurization and preservative viz. P<sub>0</sub>-sodium benzoate at 0 ppm, P<sub>1</sub>-sodium benzoate at 400 ppm, P<sub>2</sub>-Sodium benzoate at 500 ppm and, P<sub>3</sub>-Sodium benzoate at 600 ppm. The design of