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## Studies on effects of total soluble solids, acidity and carbonation levels on quality of sweet orange beverage

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### ABSTRACT

The sweet orange ready-to-serve (RTS) carbonated beverage was prepared by extracting and clarifying the juice and adjusting the total soluble solids (TSS) to 56, 60, 64 and 68°Brix with sugar and acidity to 0.5, 1.0 and 1.5 % with citric acid. It was observed that the beverage with 60° Brix TSS and 1.0 % acidity was found superior in sensory characteristics with respect to colour, aroma, taste, mouthfeel and overall acceptability followed by beverage with 60°Brix TSS and 0.5 % acidity over the beverage prepared by using other levels. The beverage carbonated at 120 psi pressure scored highest for sensory quality than those at 75 and 120 psi.

**Key words :** Sweet orange, Total soluble solids, Ready-to-serve beverage, Carbonation, Sensory characteristics

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### INTRODUCTION

The sweet orange (*Citrus sinensis* Osbeck) is non-climacteric citrus fruit grown in sub-tropical climates. It has three types such as normal oranges, blood oranges and low-acid oranges with varying capacity of juice yield. The fruit juice has low shelf-life and need preservation. Of the many methods of preservation of juice, carbonation is the best one with little changes in quality parameters. Carbonation is the process of adding sufficient CO<sub>2</sub> in beverage so that on serving, product gives off the gas in fine bubbles and has the characteristic pungent taste suitable to the beverage carbonated. Carbonation also prolongs the shelf-life of the beverage and contributes in some measure to its tang (Ranganna, 2000). It is also reported to enhance the appearance, flavour, taste and overall liking partly due to increased acidity and unique test, sparkle and taste of CO<sub>2</sub> gas itself (Baranowski and Park, 1984).

The degree of carbonation is expressed in terms of volume. One volume of gas means 200 ml CO<sub>2</sub> present in 200 ml beverage when measured at 15°C and atmospheric pressure. Carbonation may vary from less than 1 volume in fruit drinks to 4 in cola drinks and more than 5 in soda

(Natarajan, 1983). Carbonated beverages are the development of attempts to produce artificial effervescent waters similar to those of natural springs. After a time, flavours are added to increase the palatability. Carbonated beverages most familiarly known as soft drinks are mainly water, impregnated with CO<sub>2</sub> gas and contain colour, flavour, sugar and acid. An airtight pressure, seal is used to retain the CO<sub>2</sub>.

It is estimated that soft drinks worth nearly 2 crores of rupees are marketed annually in India. In addition to a number of large units, manufacturing RTS of standard quality, small units both in rural and semi-urban are also manufacturing the soft drinks. However, very little data are available regarding the exact nature of such drinks (Phillips, 1992).

Fruits are important nutritional protective foods, which improve the quality of diet and maintain health. It is, therefore, necessary to ensure their availability throughout the year in fresh, processed or preserved forms. Only 1.3 % of total fruits and vegetables produced in the country are processed against 40 % in some of the developing and 70% in developed countries (Mehta *et al.*, 2002). Therefore, attempts were made in the present investigation