

Preparation of Candy from Kinnow (Citrus) Peel

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ABSTRACT

Kinnow, a citrus, fruit is grown widely in Punjab, Haryana, Rajasthan, Himachal Pradesh in India. Kinnow peel is a waste from citrus processing industries and it can be obtained from waste fruits. The peel has used in the preparation of kinnow candy. This will not only reduce the waste but also add value to citrus fruit and benefit to growers and country as well. Kinnow peel candies were prepared by varying the sugar concentration. Three different samples of kinnow peel under three different treatments (50 °C for 15 minutes cooked in 40 °Brix sugar syrup solution, 60 °C for 20 minutes cooked in 50 °Brix sugar syrup solution and 70 °C for 25 minutes in 60 °Brix sugar syrup solution) have been prepared. The samples were tested on the basis of hedonic scale tested on a panel of 7 experts. These candies aftertaste is acceptable to some consumers and not to some others due to bitterness.

Keywords: Kiinow peel, Citrus, Sugar syrup, Candy

1. INTRODUCTION

Kinnow (*Citrus reticulate* Blanco), a hybrid between “King and Willow leaf” belongs to the citrus family of fruits and is an important fruit of India. It is largely grown in Punjab, Haryana, parts of Himachal Pradesh and Rajasthan in India. Besides India, kinnow is extensively grown in different parts of Pakistan and Afghanistan. The production of kinnow in India is estimated at 0.4 million tons in 2006 [1] with Punjab alone accounting for nearly 75% of the total production. Processing and utilization of kinnow into various products eventually lead to the generation of waste in form of peel, pulp and seeds. Kinnow waste is conventionally used as animal feed. In process of juice extraction from kinnow 30-40% peel is obtained. The peel of the fruit, which is generally considered a waste, is more nutritious than juice can be processed into candies. In the present study we are preparing candy from kinnow peel. This will not only reduce the waste but also add value to citrus fruit and benefit to growers and country as well.

2. MATERIALS AND METHODS

For manufacturing of Kinnow peel candy, sufficient amount of Kinnow peels were taken and were washed under running water to remove dust and dirt from the surface. Extra white part rags that

were attached to the inner surface were removed manually. Cleaned peels were then dried under fan to remove adhering moisture. Then the Kinnow peels were cut according to desired shape and size. The peels were cut uniformly about 1cm of length and breadth. The thickness of the peels was maintained to 1mm using scraper. Then some small pores were made in the peels for the proper insertion of sugar syrup into the peels. The Kinnow peel candy was made under three different sugar syrup concentrations viz. 40 °Brix, 50 °Brix and 60 °Brix. The peels were dipped in the sugar syrup with constant cooking and stirring gently. After proper cooking the candies were taken out of the pan or vessels used and were dried. It was observed that candy prepared in the maximum sugar concentration (60 °B) has the best result in respect of texture, taste and flavor. The general manufacturing process of Kinnow peel candy has been given in Figure1.

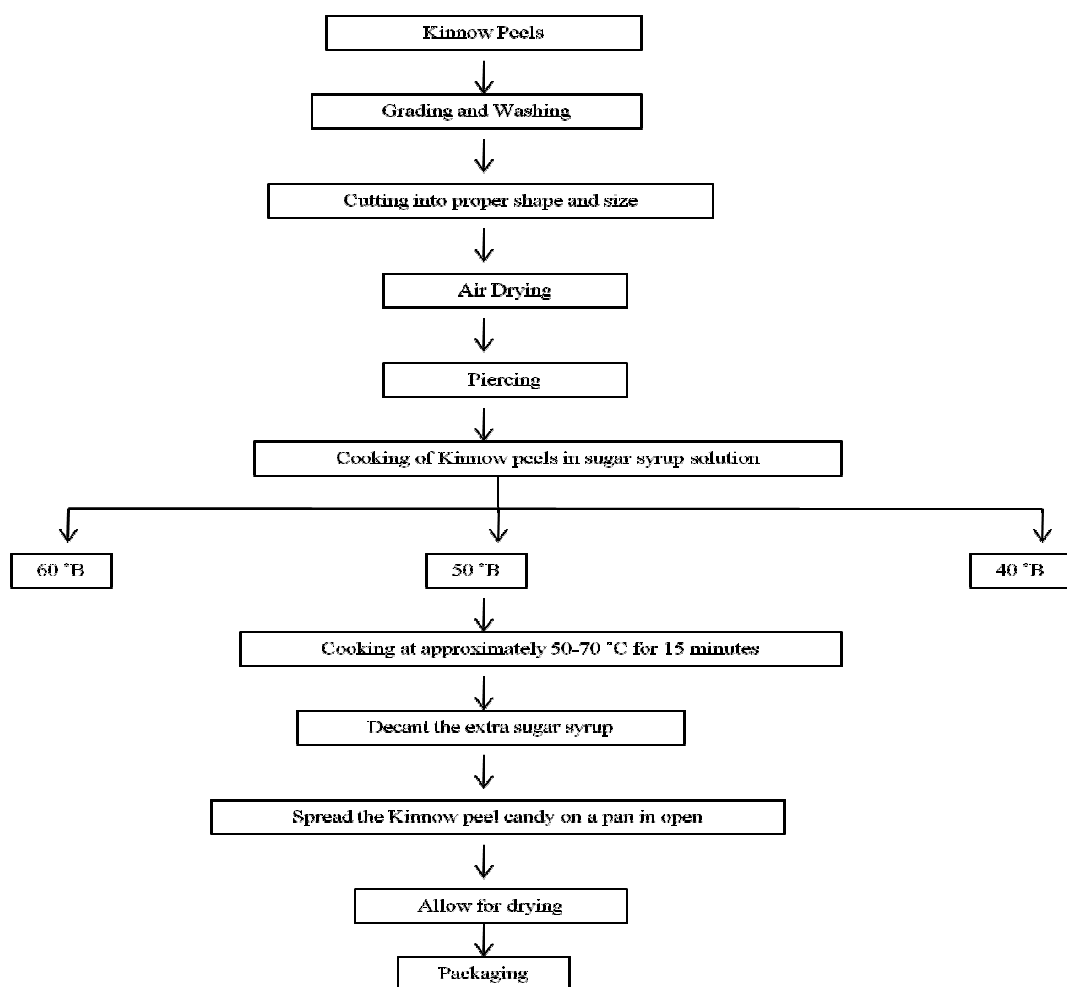


Figure 1: Preparation process of Kinnow peel candy

3. RESULTS AND DISCUSSION

In our experiment, we had made 3 different types of Kinnow peel candy and named them sample no. 1, sample no. 2 and sample no. 3 accordingly. First one with cooking time and temperature as 50 °C for 15 minutes cooked in 40 °Brix sugar syrup solution. The final product thus obtained was acceptable in respect of color, shape and size, but it imparts raw peel type flavor in mouth after eating. The second trial was prepared at 60 °C for 20 minutes cooked in 50 °Brix sugar syrup solution. The final product obtained through this experiment was also not very much accepted in respect of color and taste. But the third experimental trial in which peels were cooked at 70 °C for 25 minutes in 60 °Brix sugar syrup solution, gives very much acceptable color i.e. chocolate color to the Kinnow peel candy probably due to caramelization of sugar. The candy completely gives the lookup of chocolate. It was also accepted by trained panelist when were analyzed by them on a 9 point hedonic scale. The average sensory scores based on hedonic scale of 7 trained panels have been summarized in table no. 1. A sample photo of kinnow candy is given in figure 2.

Table no. 1 Average sensory scores of the Kinnow peel candy

Sample no.	Taste	Color	Flavor	Bitterness	Overall acceptability
1	6.42	7.57	7.00	6.00	6.85
2	7.42	7.42	6.85	7.71	7.57
3	8.57	7.71	7.14	8.57	8.57



Figure 2: Photo of Kinnow candy

4. CONCLUSION

Three different samples of kinnow peel under three different treatments (50 °C for 15 minutes cooked in 40 °Brix sugar syrup solution, 60 °C for 20 minutes cooked in 50 °Brix sugar syrup solution and 70 °C for 25 minutes in 60 °Brix sugar syrup solution) have been prepared. All the samples were tested on the basis of hedonic scale tested on a panel of 7 experts.

Sample 1 has acceptable color but it gives a raw peel type off-flavor in mouth after eating. Sample 2 was also quite acceptable with respect to color and taste. But sample 3 gives the best result among all the three samples. It gives chocolate color to the kinnow peel candy probably due to caramelization of sugar. The candy completely look likes a chocolate. It was also most acceptable by trained panelists. This candy also imparts a little bit bitter aftertaste to the consumer. This aftertaste is sometime acceptable to some consumers and not to some others. Finally concluded that we can say some more experiments and researches are required to remove the bitterness from kinnow peel or from kinnow peel candy, so that it could be commercialized without any off-flavor.

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