



Effect of Different Extractions of Juice on Quality and Acceptability of Guava Jelly

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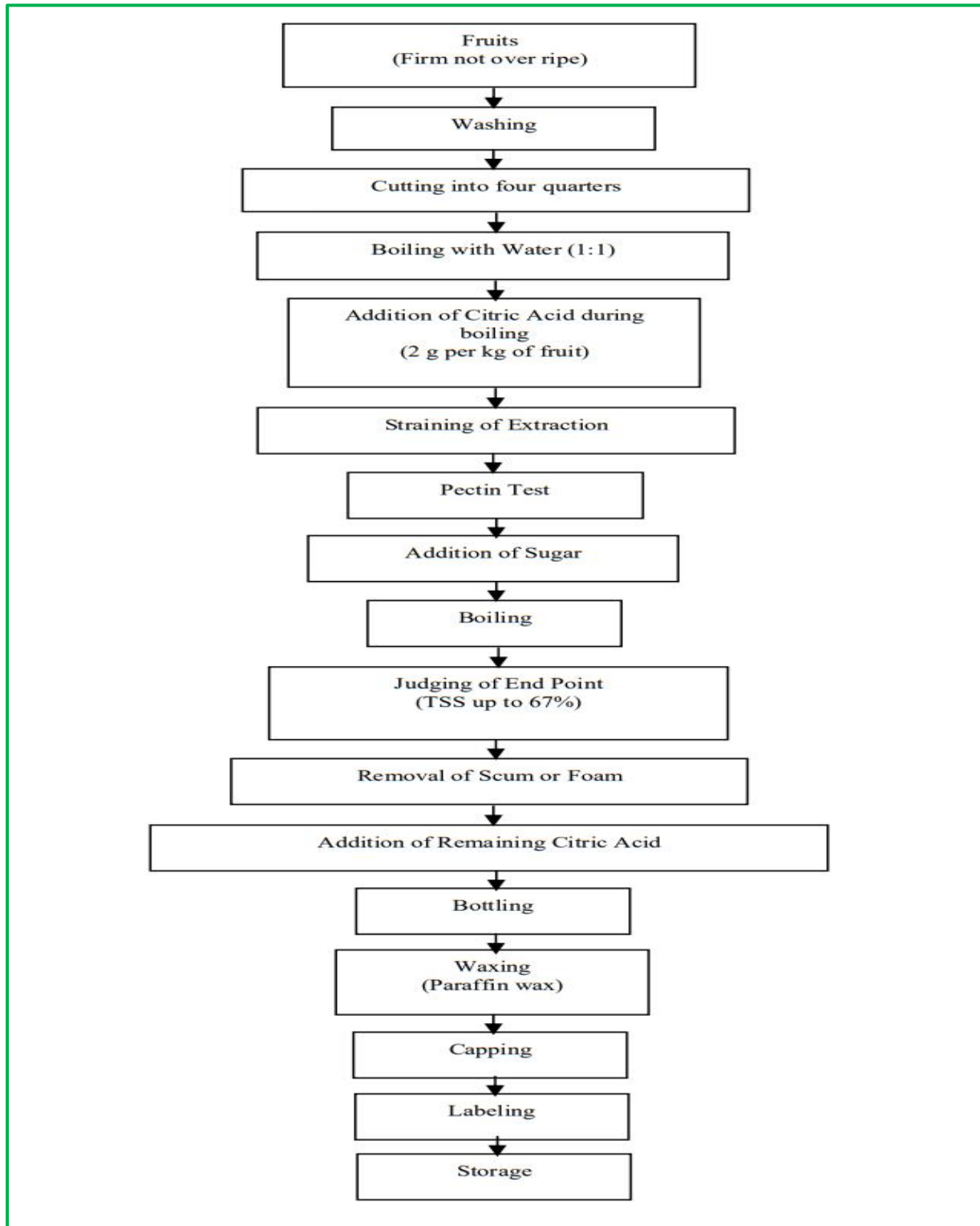
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Guava (*Psidium guajava*) family Myrtaceae is widely grown all over the tropics and sub-tropics though Origin of guava is the tropical America but in this sub-continent, guava has been in cultivation since early 17th century (Mitra and Bose, 1990). It has become one of the most common and important fruits in Bangladesh for its nutritive value and pleasing test. It claims to be the most important fruit in area and production after mango, jackfruit, guava and lemon (Anonymous, 1995). It is grown in the homestead gardens throughout the country even without or with little care. But in some regions such as Barisal, Sylhet and Chittagong it is cultivated commercially. Bangladesh produced 10.09 metric tons per acre of guava fruits in the year 2005-2006 (BBS, 2006). Guava is popular among the people of all social strata due to its comparative low price than some other fruits, nourishing value and good taste. It is a rich source of vitamin C (260 mg/100 g) which is the second after amla (600 mg/100 g). It is also rich in pectin. It is a fare source of vitamin A and good source of calcium and phosphorus. Guava fruits are relished when mature or ripe and freshly plucked from the tree. It is used for various purposes. Raw guavas are eaten out of hand but are preferred seeded and served sliced as dessert or in salads. It can be used in preparation of Jam marmalade and juice. Guava jelly is well known to all and it can be canned in sugar syrup or made into fruit butter. Its juice is used for the preparation of sherbets and ice cream. The roots, bark, leaves and immature fruits, because of their astringency are commonly employed to halt gastroenteritis, diarrhea and dysentery. The prevention of losses of the seasonal surplus of the fruit by processing and preservation techniques at farmers' level and as well as industrial scale should be warranted. Such efforts will help the development of processing industries in the growing areas of the country. Moreover this will stimulate an increase in production and bring return to the guava growers. Besides, guava fruits can not be kept for longer time unless preserved properly. So products from these are not available in the market. If some suitable methods are developed for preserving these fruits in various products and which could be made available all the year round for the consumers as well as producers use. As a result the producer and the consumer will be benefited, therefore, wise to conduct intensive and the developing products for domestic and public consumption. The study was undertaken with the following objectives: to analyze the composition of juice at different stages of extraction; to find out suitable formulations for the guava jelly with juices from different extractions; to study the shelf life of the product; and to study the sensory attributes of the final products.

Materials and Methods

The experiment was conducted in the Laboratories of the Department of Food Technology and Rural Industries, Faculty of Agricultural Engineering and Technology, Bangladesh Agricultural University, Mymensingh, during the period January to October, 2007. The experimental materials, guava was collected from local market of Mymensingh. The guavas

were carefully chosen in order to obtain the optimum mature stage because it contains maximum pectin, sugar, citric acid and relevant materials required for the experiments were received from the laboratory stocks. Completely Randomized Design (CRD) was applied for analysis of experimental data and sensory evaluation of guava products. DMRT (Duncan's Multiple Range Test) was also applied to assess sensory attributes. Guava jelly samples were judged by ten panelists. The juice was extracted at three different stages. The guava and the extracted juices were analyzed for chemical composition. Jelly was prepared by using different sample. The sensory attributes and shelf life of the jelly were studied.



Extraction of guava juice

Fresh and fully mature guava were weighed and washed thoroughly in water. Soft and over ripe fruits were rejected as far as possible, because they were unfit for preparation of good jelly (quality product). The washed guava was cut into four quarters with a stainless steel knife. Then 1 kg of guava pieces was boiled in 1 liter of water and added 1 g of citric acid into the dish and boiled half an hour. The juice was separated by the filtering through a coarse cloth.

Preparation of guava Jelly

Various ingredients for the preparation of guava jelly were weighed according to the specifications. Sugar and pectin were mixed thoroughly, and then added the extracted juice to mixed sugar and pectin. The mixture was cooked till it boiled or gave the sheeting test (TSS 65%) and then citric acid was added. The finished product was poured into clear dry sterilized glass jars. The paraffin in the upper portion of cooked jelly was poured. Then the products cooled and sealed the jars tight. The final products stored in a cool dry place.

Chemical characteristics of guava jellies

According to formulation sugar concentration of guava jellies were prepared by mixing different ingredients. After preparation of guava jellies the chemical composition of the jellies were determined. The compositions of guava jellies at different samples are shown. Vitamin C content at different samples of guava jellies were found negligible.

Sensory evaluation of guava jelly

To evaluate the sensory attributes such as colour, flavour, texture and overall acceptability of different samples of prepared guava jelly were served to the panelists who were asked to evaluate them on a 1-9 point hedonic scale and the mean scores obtained by various samples for different sensory attributes are presented.

The average sensory attributes scores of prepared guava jellies were statistically analyzed for variance among the jellies prepared by different sample. Table 5 shows that colour of jelly prepared from Sample B is the best than other samples. Sample B got highest score (8.10) and Sample C the lowest score (7.10). In case of flavour jelly prepared from Sample A is the best than other samples. Sample A got highest score (8.10) and Sample C the lowest score (6.60). In case of texture jelly prepared from Sample E is the best than other samples. Sample E got highest score (8.00) and Sample B the lowest score (7.10). In terms of overall acceptability there was highly significant difference among the prepared jelly. Table 5 shows that jelly prepared from Sample D is the best than other samples. Sample D got highest score (8.20) and Sample C the lowest score (7.10).

Storage studies of guava jelly

During storage the changes in TSS, Acidity, pH, colour, flavour and fungal growth of guava jellies were observed at 15 days intervals up to 60 days and 30 days intervals up to 270 days at room temperature. Into glass bottles changes of TSS of guava jellies have been shown in Table 6. It was observed that the TSS of jellies did not show any remarkable change up to 180 days of storage. After 180 days it was started to change. In case of acidity of guava jellies, It was observed that the changes were not occurred up to 90 days of storage. After 90 days it was started to change. This might be due to the fermentation or hydrolysis of sugar. The changes of pH were not remarkable up to 90 days of storage. It was observed that pH of jellies was slightly reduced after 90 days of storage. Changes of color and flavor were not remarkable up to 210 days during storage. But changes of color and flavor were found after 210 days due to fungal growth and fermentation.

Conclusion

This study indicates a bright prospect of processing of jelly from different stages of extraction juice for benefit of the growers, processors and the consumers in Bangladesh. It may also be mention that by exporting the best quality jelly of International Standard may earn foreign exchange that may have positives contributes in the national economy of Bangladesh. However, further study is necessary for research with fruit juice and other products.

References

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