



Formulation and Sensory Evaluation of Mango Jelly Enriched with Extract of Periwinkle Flower

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Abstract

Sensory appraisal is a discipline of measurements strongly allied with precision, accuracy, and sensitivity to avoid from wrong assenting results. Application of recommended sensory evaluation showed that best characteristics of fruit jelly were medium strong consistency, gloss surface, crystal transparency, moderately sweetness and characteristic fruit colour, flavour, and aroma.

Imprecisely sensory evaluation is categorized into objective and subjective testing. In former method, hedonic response of a product is determined by skilled evaluators whereas in second method, consumers are involved in the evaluation process. Hedonic assessment is the economical and ideal method to find out the influence of variations like ingredients, manufacturing, wrapping or shelf-life. The successful sensory evaluation in food industries is achieved by linking sensory properties to physical, chemical, formulation and process variables which enables manufacturing food products with maximum consumer acceptance.

Keywords: Formulation of jelly, sensory evaluation, storage conditions for jelly.

1. Introduction:

Jellies are defined as the products brought to semisolid gelled consistency and made from the juice and / or aqueous extracts of one or more fruits or vegetables, mix with foodstuffs with sweetening properties with or without the addition of water.

[1]. Jellies are made by cooking fruit juice with sugar. A good product is clear and firm enough to hold its shape when turned out of its container yet quivers when moved. When cut, jelly should be tender yet retained the angle of the cut. Jelly should taste fresh and fruity.[2] It should not be gummy, sticky, or syrupy or have crystallized sugar. The product should free from dullness with little or no syneresis and neither tough nor rubbery. Pectin, acid, sugar (65%) and water are four essential ingredients. Pectin test and determination of end-point of jelly formation is very important for the quality of the jelly. Pectic substances are present in the form of calcium pectate are responsible for the firmness of fruits and vegetables. Usually about 0.5-1.0 percent of pectin of good quality in the extract is sufficient to produce good jelly. If the pectin content is higher a firm and tough jelly is formed and if it is less the jelly may fail to set. The jelling of extract depends on the amount of acid and pectin present in the fruits and vegetables. The final jelly should contain at least 0.5% but not more than 1% acid because a large quantity of acid may cause syneresis and here citric acid was used. Sugar is essential constituent of Jelly imparts to it sweetness as well as body. If the concentration of sugar is high, the jelly retains less water resulting in a stiff jelly because of dehydration. [3]. Periwinkle plant is found all over India. Other than as a ornamental, periwinkle flower is used as a medicinal plant. The alkaloids present in the periwinkle flower that is known by the name of vincristine and vinblastine are used in the treatment of tumour or cancer. It is also effective for the diabetic patients. It is used as ornamental due to its attractive colours which includes blue, pink, purple, or white flowers which bloom throughout the growing season. It is used as traditional medicine as a remedy for a variety of ailments, including diabetes, cancer, and heart diseases. Periwinkles are used in landscaping and gardening to control soil erosion due to their ability to spread and form a dense mat of foliage. In some areas, periwinkles can become invasive and cause problems by outcompeting native plant species. In these situations, periwinkles can be used for controlling erosion of slopes and in other areas where vegetation is difficult to establish.

2. Materials and Methods

2.1. Materials Procurement

Periwinkle flower, mango, corn starch, pectin, citric acid and sugar were procured from the local market at Lucknow, Uttar Pradesh. Fresh periwinkle flower and mango were subjected to cleaning, sorting and grading operations and were further utilized for further processing.

2.2. Preparation of periwinkle flower extract

Cleaned and graded periwinkle flower were allowed to be used for the further processing of extraction. Then all the periwinkle petals were added in 1.5 times water and then boiled for 15-20 minutes. The periwinkle extract was then strained off and collected for further use. The boiled petals were then strained using muslin cloth to obtain periwinkle flower extract and then again filtered and added to the drained juice to obtain clear juice extract.

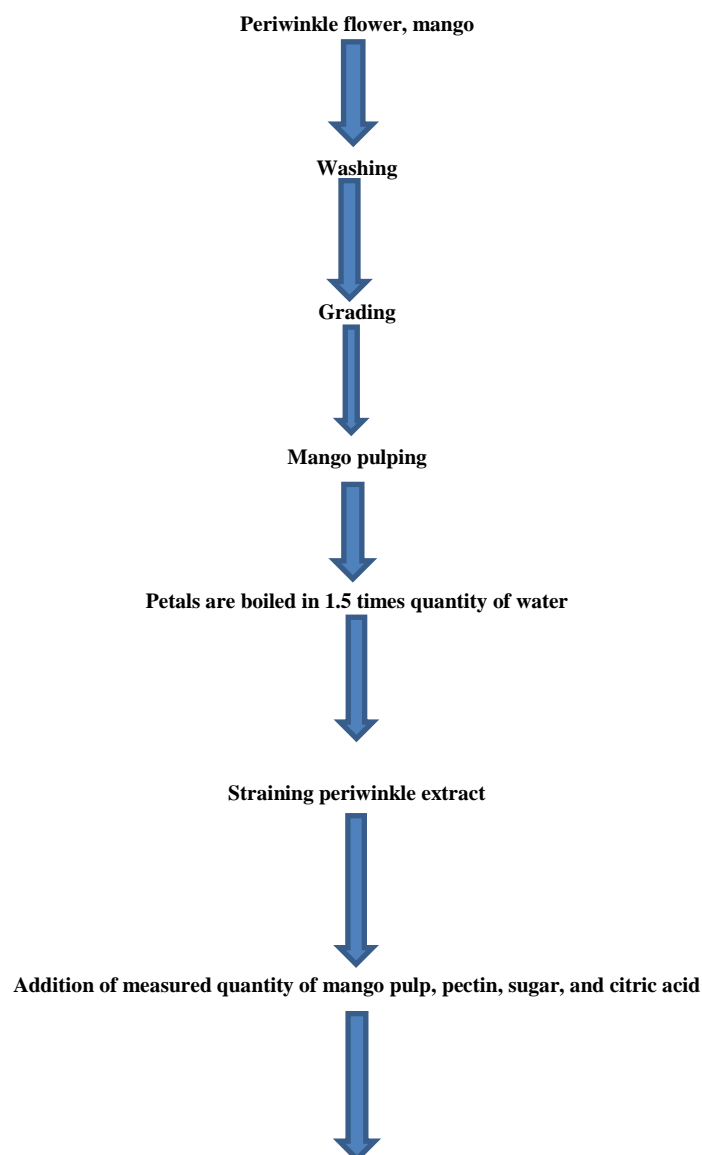
2.3 Preparation of mango jelly enriched with periwinkle flower

100 ml of the clear periwinkle extract was heated along with 700g of mango which is then converted into mango pulp using grinder and 2% pectin, 61 % sugar and 0.5% citric acid was added to the extract while heating. Heating was continued with constant stirring until the TSS reached to 65°Brix and desired consistency was reached. Alcohol test was carried out to determine the pectin content and amount of sugar to be used as described by R. Srivastava and S. Kumar [3].

2.4 Alcohol Test

One teaspoon of strained extract was taken in a glass beaker and cooled and to that 3 teaspoon of methylated spirit was poured gently down on the side of beaker, which was shaken and allowed to stand for few minutes. As the extract was poor in pectin, numerous small clots were seen, so half the amount of sugar was added with respect to the amount of extract, i.e., Juice extract: Sugar is 1:0.5 [3].

2.5. Basic Procedure:



Heating the mixture



Judging the end point final TSS should be 65⁰ brix

3. Storage of the jelly:

Jelly was stored at cool temperature (10°C) and at room temperature (20°C) until the analysis. They were analysed immediately after manufacture and after 6 and 12 months of storage.

Sealed jars of homemade preserves can also be stored at room temperature. Once the jelly is opened, however, it is best to refrigerate them. This prevents mould and yeast from growing. If not refrigerated, opened jellies are likely to spoil quicker.

Some jellies may have a shorter shelf-life than others for optimum quality. For example, lighter-coloured jellies may noticeably darken faster than others and not remain appealing for a whole year. Though this is not a safety concern, it may reduce the visual appeal of the product for many people. The type of fruit used to make jelly will also affect other quality characteristics over time.

It is always a good practice to carefully examine all home-canned jars of food for signs of spoilage prior to opening and eating. If there is any mould growth on a jar of jelly, or signs of other spoilage, discard the entire contents of the jar or container.

4. Results and Discussions

4.1 Sensory Evaluation:

The reduction of sugar and the addition of healthier ingredients in jellies brings some improved health characteristics to a product that usually is devoid of nutrition. Therefore, the aim of this study is to develop jellies using natural ingredients, without added sugars or additives. In today's market, consumers prefer food products to provide both health benefits and nutritional value. This trend has accelerated the demand for balance, healthy, and nutritious food products and has particularly caused an impact on the confectionary industry, because of its extensive implications for a poor diet and possible adverse health effects.

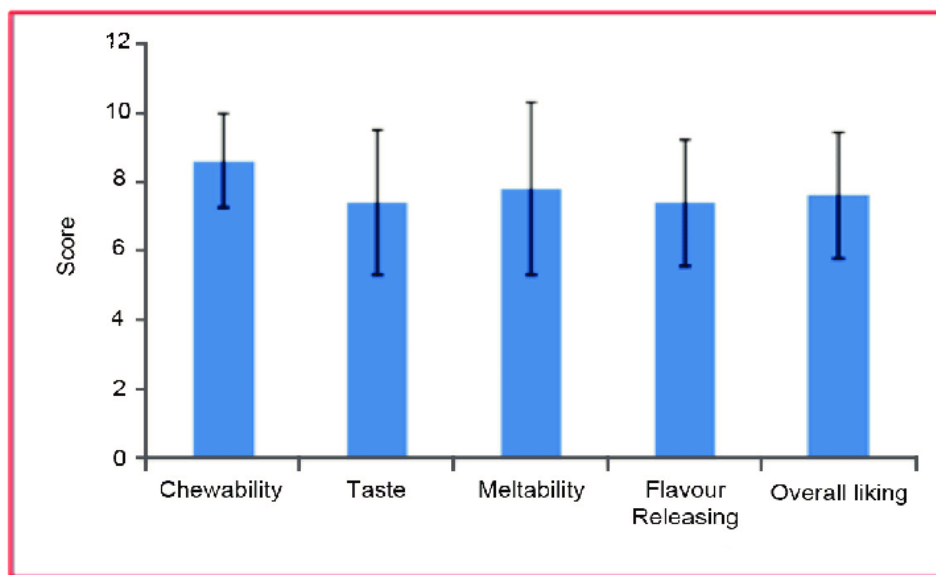


Fig. Showing sensory evaluation

The high consumption of sugar has a negative impact on children's health, for instance, increasing obesity, impulsiveness, addictive behaviour, and stress-driven anxiety. To improve the healthy aspects of jelly, natural sweeteners can be added to replace sugar.

Sensory evaluation of jelly can be done on the basis of texture, aroma, taste, colour or appearance.

Sensory evaluation concerns the interpretation what the senses inform about the product. It is important to create list of descriptors adequately denoting the products and their properties. Fruit jelly is product made from fruit juice, sugar, and food additives in order to achieve gelatinous consistency. It is important for product quality sensory control to define expected quality attribute denoting quality of product, excellence of preparation and contribution

to the enjoyment of eating. The objective of sensory analysis was to create useful guide for quantitative description analysis. For the jelly, analysis can be done on the basis of visual appearance, colour, texture, flavour, aroma, degree of sweetness, and degree of sourness, with appropriate descriptors that can be trained members or panellists or untrained people. Application of recommended sensory evaluation showed that the best sensory characteristics of floral jelly were medium strong consistency, gloss surface, crystal transparency, moderately sweetness and characteristic colour, flavour and aroma.

4.2 Problems Observed during Jelly Preparation

Formulation with less than 2% pectin showed failure to set. It is necessary to observe T.S.S. minimum 65⁰ brix, for proper setting of jelly. Excess sugar (T.S.S.) can formed crystals or over concentration of jelly. Avoid prolonged cooking since it destroyed coagulation property of pectin. During boiling of mixture scum forms over the surface, if not removed it results in the formation of cloudy jelly. Care should be taken during pouring.

5. Conclusion

Periwinkle is a flower having good therapeutic and nutritional value. It is rich source of alkaloids. Use of periwinkle in food processing is limited. In order to make value addition, in the present study periwinkle jelly was developed successfully. For the development of periwinkle jelly formulations was standardization using 2% pectin, 0.5% citric acid, and 61% sugar. These periwinkle jelly has more space to be popular among all age group. Formulation of periwinkle jelly scored good in sensory evaluation with overall acceptability.

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