



## Quality characteristics of herbal jelly

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### ARTICLE INFO

#### Article history:

Received: 6 July 2014;

Received in revised form:

21 August 2014;

Accepted: 15 September 2014;

#### Keywords

Herbs,  
Jelly,  
Sensory quality.

### ABSTRACT

Herbs are an ancient source of flavourings, aromatic compounds and medicines. Their health properties are linked to a number of chemical constituents, including vitamins, flavanoids, terpenoids, carotenoids, phytoestrogens and minerals. Herbs and their components have high antioxidant activity and antimicrobial property, which in a food matrix can delay the spoilage. With the growing popularity of herbs, it is not surprising that they are finding their way into fruit jellies. Considering this, an attempt was made to develop guava jelly containing selected herbal extracts namely *Mentha cordifolia*, *Coriandrum sativum* and *Ocimum tenuiflorum*. They were analysed for physico-chemical and organoleptic characteristics. The prepared jellies possessed optimum level of total soluble solids (TSS), pH and acidity. Taste panellists recorded high scores for the herbal jellies compared to plain guava jelly due to its characteristic flavour and colour. The jellies prepared using herbal extracts were more transparent and quivery. Taken together, herbal extracts would appear to have a positive effect on the jelly quality in terms of most of the physicochemical properties and sensory evaluation. The preparation of good quality jelly with herbal substitution is certainly becoming a matter of very much importance, as it benefits the mankind in various ways.

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### Introduction

Medicinal plants are the boon of nature to cure a number of ailments of human beings [1]. India with its vast geographical diversity inhabits about 17,000 species of higher plants and among that 7500 are known for its medicinal properties [2]. Herbs are plants valued for their medicinal and aromatic properties and often grown and harvested for these unique properties. The knowledge on herbs has been handed down from generation to generation thousand of years. Herbs are rich in volatile oil which gives pleasurable aroma. In addition herbs may contain alkaloids and glycoside which have great pharmaceutical effect [3].

Tulsi, the “Queen of Herbs” is the most sacred herb of India. *Ocimum sanctum* (OS) has been adored in almost all ancient ayurvedic texts for its extraordinary medicinal properties. OS has a variety of biological / pharmacological activities such as antibacterial, antiviral, antifungal, memory enhancer, antihypercholesterolaemic, hepatoprotective, antidiabetic, antioxidant, anticancer, chemopreventive, antiulcer, and anticoagulant activities [4].

*Mentha spicata* (Mint) are extensively used as herbal medicines all over the world. Mint possesses antioxidant properties due to the presence of active constituents like menthone, menthol, rosmarinic acid and carvone. This herb is considered as stimulant, carminative, antispasmodic, stomachic and diuretic, and is used in the treatment of gas pain, rheumatism, toothache and muscle pain [5].

*Coriandrum sativum* (Coriander, Dhania.) is highly reputed ayurvedic medicinal herb used as flavouring agent and/or as traditional remedies for the treatment of different disorders in the folk medicine systems of different civilizations [6]. Essential oil, flavonoids, fatty acids, and sterols have been isolated from different parts of *C. sativum* [7].

Guava is the apple of the tropics and is one of the most common fruits of India. It is a rich source of pectin and acid content and has thick flesh and is preferred for jelly making [8]. Jelly is a semi-solid product prepared by boiling a clear strained fruit extracts free from pulp after the addition of required amount of sugar, citric acid and pectin. It should contain minimum 65 percent of total soluble solids and minimum 45 percent of fruit portion [9].

Plants constitute an important source of natural products which differ widely in their structures, biological properties and mechanism of action. Various phytochemical components especially polyphenols, flavonoids, phenolic acids etc. are responsible for the free radical scavenging and antioxidant activity of the plants. Therefore interest in utilizing a quantifiable natural source of these potent and versatile herbs has become paramount. In view of this, the present study was carried out to formulate herbal jellies and to evaluate the quality characteristics of the formulated herbal jelly.

### Materials and methods

Herbal jellies were formulated using three different types of herbs namely *Mentha cordifolia*, *Coriandrum sativum* and *Ocimum tenuiflorum*. The herbs were cleaned, washed and boiled with water and filtered to obtain the clear extract. Gelatin was used as a gelling agent. Sugar syrup was used as a bulking agent which provides body to the jelly. The herbal extract (100 percent) was boiled with sugar and gelatin. Boiling was continued with the addition of citric acid until total soluble solids reached to 65° Brix by following the FPO specifications. The boiled jelly was transferred in to the moulds and then allowed it for cooling and settling undisturbed by covering the moulds to avoid exposure to outer environment.

Prepared jellies were evaluated for their qualities by visual judgements, physicochemical and sensory quality

characteristics. Visual judgements like setting property, clarity and weeping. Physicochemical parameters like Total Soluble Solids (TSS), titrable acidity, pH, moisture and total solids were estimated using standard analytical methods [10, 11]. Triplicate determinations were made for each attribute and average values of the parameters were reported.

Product's sensory characteristics have the biggest influence on quality evaluation and decision making [12]. Each sample was coded and served in a clean plate to 25 Semi-trained panellists for sensory evaluation. The samples were assessed for colour, texture/spread ability, aroma/flavour, taste and overall acceptability using a five point hedonic scale where 5 represents 'highly acceptable' and 1 represents 'not acceptable'. The qualities of different jellies were compared with that of standard guava jelly.



## Results

Jelly is a semi solid product prepared by boiling clear strained pectin containing fruit extract free from pulp, after addition of sugar and acid to a stage at which a clear gel forms. Herbs were utilized for jelly formulation to provide natural colour and flavour and in addition to provide medicinal properties of the particular herbs.

### Visual judgement of the formulated herbal jellies

Time taken for setting was recorded as the time taken by the jelly for attaining a proper set of required consistency after pouring in to the moulds. Each jelly was examined for their consistency after setting. The time taken for all jellies was 35 minutes.

Cloudiness was determined by comparing with the clarity of guava jelly. Herbal jellies were very clear and transparent compared to the standard.

The moulds in which the jelly was kept, was tilted and examined for separation of water from it. The jelly in which separation of water noticed was denoted as weeping jelly and it was observed that none of the jelly had weeping quality.

**Table 1**

### Visual judgement of the formulated herbal jellies

Jellies/ Properties	Setting time (minutes)	Cloudiness	Weeping noticed
Guava jelly	35	Clear	No
Mint jelly	35	Very clear	No
Coriander jelly	35	Very clear	No
Tulsi jelly	35	Very clear	No

### Physicochemical parameters of the herbal jellies

**Table 2**

### Physicochemical parameters of the herbal jellies

Parameters	Guava jelly	Mint jelly	Coriander jelly	Tulsi jelly
Moisture (%)	27	26	26	27
Total solids (%)	73	74	74	73
pH	4.2	4.2	4.2	4.2
Acidity (%)	0.09	0.06	0.06	0.06
TSS (°Bx)	66	67	66	66

The formulated herbal jellies were analysed for their physicochemical parameters and the data is represented in the Table – 2. The total soluble solid of the herbal jellies was recorded to be 66. Titrable acidity of developed jellies ranged between 0.06 to 0.09.

### Mean sensory scores of Herbal jellies

**Table 3**

### Mean sensory scores of Herbal jellies

Parameters	Guava jelly	Mint jelly	Coriander jelly	Tulsi jelly
Colour and appearance	4.2	4.8	4.6	4.9
Consistency	4.4	4.8	4.8	5.0
Flavour	4.4	4.7	4.6	4.2
Taste	4.4	4.6	4.7	4.6
Overall acceptability	4.3	4.7	4.6	4.4

5 – Highly acceptable 1 – Not acceptable

Herbal jellies were subjected to sensory evaluation. Twenty five semi trained panel members evaluated the colour, flavour, texture and overall acceptability of the herbal jellies. The mean scores for colour, flavour, texture and overall acceptability of different samples are presented in Table 3. The colour and appearance of the herbal jellies were extremely liked by the panel members when compared to guava jelly.

The consistency of the herbal jellies was much preferred than standard guava jelly. Similarly, herbal jelly recorded maximum score for taste. The flavour of the herbal jellies (Mint and Coriander) secured higher score than standard guava jelly which could be attributed to the presence of volatile oils which imparts pleasant aroma to the jelly. Of the different herbal jellies, mint recorded maximum score for overall acceptability.

### Conclusion

Jelly is a product which is now becoming popular among all age groups. It was concluded that herbal jelly (100 percent) prepared with *Mentha cordifolia*, *Coriandrum sativum* and *Ocimum tenuiflorum* were found to be superior to those prepared with plain guava in all characteristics. The present investigation showed the possibility and acceptability of herbal jelly both in terms of sensory and physicochemical properties. The study indicated that herbal jelly recorded pleasant flavour and better natural colour due to its phytochemical constituents. The preparation of good quality jelly with herbal extract is certainly becoming a matter of much importance, as it benefits the mankind due to the presence of phytochemicals and paves way for commercialization.

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