



New product development-rose lime cordial Formulation and Shelf life evaluation of cordial based on Rose (*Rosa indica*)

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Abstract

Rose (*Rosa*) and Lemon (*Citrus Limon*) are two widely used flower and fruit in Indian homes because of their immense health benefits. They are used as eatables and used for home remedies to cure or help with specific health problems. In this product, I have tried to incorporate both lemon and rose to make a cordial that is filled with health benefits as discussed in the report and a beneficial and tasty way to consume the above without wasting much. Since the scent of roses intoxicated me, a versatile rose cordial sounds like a lovely idea. We used juice and zest of the lemon, which prevents wastage also as most of the covering of fruit is discarded without actually realizing its use. The report focuses on a product prepared using a simple mixture of water, sugar, etc. Natural sugar is a better choice for cordial preparation than artificial sweeteners, which do more harm than good. In the study, we have discussed the health benefits, recipe, and the strategy used in product development. The report also consists of the product's nutritional value, including the vitamins and mineral content of each product and their health benefits. The information also involves testing the product using the 9 - point hedonic scale sensory evaluation technique in which sample 2 passed in all set parameters. The formulation, processing, and organoleptic evaluation parameters for the cordial recipe were standardized. For shelf-life evaluation, the cordial was stored for 30 days at refrigerated temperature. No deterioration was observed within the first 30 days.

Keywords: cordial, rosa, citrus limon, processing, sensory evaluation, shelf life evaluation

Introduction

Across each field, a New Product Development describes the innovation and thinking alongside all the strategy and planning achieved to introduce something new in the market. New product development involves understanding the market and consumer's need and crafting it into a viable product. A new product introduced within the market evolves over a chain of stages, beginning with a preliminary product concept or idea evaluated, developed, examined and launched on the market. Overall every product development requires the developer or investor to understand the needs and requirements of the customer and the present condition of the market, which is usually dependent on some essential factors, i.e.,

Cost of the Product

Quality of the product

Time required to develop the product and,

Benefits from the product.

Combining all these factors and knowledge, a company develops a strategy which is known as NPD Strategy. There are various steps involved in a new product development strategy, namely designing the product, requirement analysis, and other business requirements. All of these steps/procedures combined make up the NPD strategy.

Dilutable Beverages

Dilutable beverages are the ones that are consumed after blending with suitable diluents like water, alcoholic beverages or milk. The procedure for making such liquids is quite similar to the syrup manufacture intended for carbonated beverages. These products provide several

merits, which includes the potential to apply different syrup to water ratio, reduction in bulk, usage of surplus and bland tasting fruits and deliver novel improvements to formulations.

Cordial

Cordial is a radiant clear, sweetened fruit beverage from which all of the pulp and additional suspended substances have been eliminated. Cordial is prepared by blending clarified fruit juice with sugar syrup, acid and other ingredients. According to the FSSAI specification, the cordial should contain at least 25% fruit content, and the TSS content should be at least 30° Brix. The acidity of the cordial should not be more than 3.5% as anhydrous citric acid. Citrus fruits like lime and lemon are favoured for making cordial.

Rose is a perennial woody angiosperm of the genus *Rosa*. Rose has a very distinct flavour and is utilized in Middle Eastern, Persian and South Asian cuisines, especially in sweets. Rose petals are used as food, also generally as a flavouring or to feature their scent to food. In India, it's extensively cultivated in Kashmir, Bihar, Uttar Pradesh and Punjab states. Rose plant having a lot of medicinal properties, which makes it very beneficial as a blood purifier. Rose petals are a good source of antioxidants, vitamins (C, A, E) and minerals like calcium and iron. Roses are high in phytonutrients and plant compounds. It is also known for its relaxing effects thus used for anxiety, depression and stress. As per ancient medicine, rose to inhibit many therapeutic effects, that's why it was used for problems like abdominal pain, chest pain, digestive issues,

etc. It is cold in potency, good for the heart and light in nature. Rose cordial helps to ease and lighten up your mood so you can stay at the peak of your mental health. Regularly drinking a beverage like this with anti-inflammatory properties is the only way to keep bloating and acidity at bay. Adding rose cordial into your diet not only can keep your skin hydrated, but it also can additionally provide you with the different punch of vitamins that your body requires to remain supple and beautiful. Casually drinking rose cordial with warm water can help soothe an inflamed and sore throat. As it contains fibre, it will help improve your bowel movements. The lemon, *Citrus limon*, is a species of a small evergreen tree in the flowering plant family, Rutaceae. The distinct sour taste of lemon juice makes it a key component in beverages and foods. Lemons are a great source of many vitamins and minerals and soluble fibre and plant compounds, namely, Vitamin C, Vitamin B6, Vitamin B1, Calcium, Iron, Potassium, Citric acid, Diosmin, Hesperidin. All these nutrients combined provide a lot of health benefits. An average lemon provides approximately 31 mg of vitamin C, i.e., around 51% of the reference daily intake (RDI). Drinking cordial rich in vitamin C reduce the risk of heart diseases like stroke by 38%. The citric acid and plant compounds present in lemons help increase the urine volume and pH value, which helps prevent kidney stones. Nowadays, iron deficiency anemia is quite common. Our stomach can absorb heme iron present in meat, chicken and fish. Still, it struggles to absorb non-heme iron, which is primarily found in plant product and the citric acid, and vitamin C in lemons helps absorb this non-heme iron to prevent anemia.

Despite being eaten in small quantities, lemon zest or peels are very nutritious. Lemon zest is the outermost part of the peel. Lemon peels contain high fibre and vitamin C, supplying 9% of the DV (daily value) in only one tablespoon. Additionally, it boasts small quantities of calcium, potassium and magnesium. It contains antibacterial substances that effectively fight common oral disease-causing bacteria. Lemon peel is high in antioxidants, as well as in D - limonene and vitamin C, and it may bolster your immune system due to its flavonoid and vitamin C content.

Orange, especially the sweet orange (*Citrus sinensis*), is a deciduous tree that belongs to the family Rutaceae. Sweet orange is the most commonly grown fruit globally, which is typically peeled and eaten fresh or squeezed for juice. Oranges are majorly cultivated in states of Maharashtra, Madhya Pradesh, Rajasthan, Tamil Nadu, Assam and Tripura. It is used for its attractive colour, distinctive flavour, and rich source of vitamin C, vitamin B, beta-carotene, calcium, and phosphorus. Orange juice prevents kidney stones because they contain large amounts of a chemical called citrate. Thus, drinking cordial seems to help improve cholesterol levels, lower the risk of high blood pressure and prevent stroke. Cordial additionally relieve symptoms of the common cold.

Ingredients

- Rose petals - 300 gm
- Lemon - 2 full lemon (juice and zest)
- Orange - 2
- Water - 200 ml
- Sugar - 250 gm
- Citric acid - 2 tsp

Methodology

- We will start with making a solution of sugar and water in a pan with a gentle boil and dissolving the sugar completely.
- Now put in the rose petals, lemon juice and zest and the thinly sliced oranges in the syrup and stir for a minute.
- Now add the citric acid and stir and keep the mixture for 24 hours in a refrigerator.
- Pour the mixture through a filter and bottle the product.
- The recipe will get approx.6-7 cups of the product depending on the juiciness of the fruit and concentration of the syrup.
- One can drink the cordial as it is or can use it to make a mocktail like a mojito with the product concentrate, or we can mix it with seltzer to create a child-friendly rose soda.



Fig 1: Sugar syrup and other ingredients



Fig 2: Mixing of syrup with other ingredients

Sensory Evaluation

The evaluation was executed to choose the best sample (two samples) of cordial primarily based on sensory attributes. The two samples of the product are subjected to 5 untrained sensory panelists along with 9 - point hedonic scale for marking the colour, smell (odour), appearance, taste, texture and flavour of the product. Collected data was analyzed to make a final scale that would tell about the overall experience of the panelists on the same criteria.

Table 1: Hedonic Rating Scale

	Score value
Like extremely	9
Like very much	8
Like moderately	7
Like slightly	6
Neither like nor dislike	5
Dislike slightly	4
Dislike moderately	3
Dislike very much	2
Dislike extremely	1

Shelf - Life Evaluation

Shelf- life assessment was carried out only with the selected best sample. The cordial was packed in plastic bottles and kept at refrigerated temperature. The sample was examined for any gas formation, discolouration, objectionable smell for storage period of 30 days.



Fig 3: Sample 1

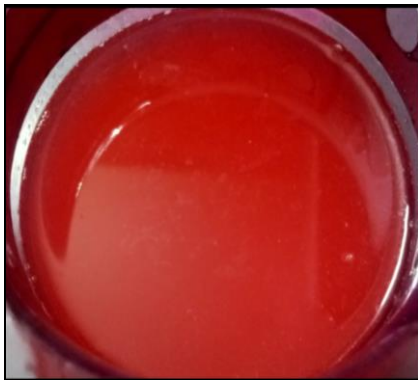


Fig 4: Sample 2

Cost Analysis

Cost of the prepared product was calculated taking into account the cost of individual raw ingredients used in the preparation of cordial as per the prevailing market price.

Results and Discussion

Formulated natural "Rose" cordial appeared with uniform consistency, free from seeds, coarse particles of pulp and extraneous matter.

Sensory evaluation

Sensory data obtained through the Hedonic evaluating test revealed significant differences in taste, flavour, smell and texture characteristics among the two cordial samples. The first sample was sourer and a little more viscous, which also affected its flavour and smell. (Table 2). However, there were no significant differences in colour and appearance among the samples. Therefore, in the second sample, the water content was increased by 50 ml. The lemon juice content and citric acid content were lowered, which improved the flavour and taste but also the issues with the product's viscosity was solved. Sample code 2 gained the highest scores. (Table 3) Hence, sample 2 was selected as the organoleptically best sample.

Shelf life

The sample did not show any gas formation, discolouration,

or objectionable smell for 30 days of shelf life.

Table 2: Sensory evaluation scores for Sample 1

Sensory attributes	Total score	Average score
Taste	15	3.0
Texture	18	3.6
Flavour	20	4.0
Odour/ Smell	24	4.8
Colour	42	8.4

Table 3: Sensory evaluation scores for Sample 2

Sensory attributes	Total score	Average score
Taste	39	7.8
Texture	34	6.8
Flavour	40	8.0
Odour / Smell	37	7.4
Colour	43	8.6

Cost determination

The total cost was calculated as follows:

Total cost = Addition of individual cost of each raw material according to the quantity needed.

The total cost of the cordial was Rs. 75 / litre (Table 4). Therefore, it is concluded that the cost of the product is fair compared to the price of cordials available in the market, quality of the ingredients, shelf life of the product, and the potential health benefits it possesses. Hence, the cost of the product is well justified.

Table 4: Cost analysis of the product namely cordial

Ingredients	Amount (g)	Cost (Rs.)
Rose petals	300	30
Sugar	250	10
Oranges	250	20
Lemons	10	5
Citric acid	10	10
Total cost ->		75

Conclusion

The present study entitled "Formulation and Shelf life evaluation of Cordial based on Rose" is conducted with the following objectives -

- To prepare a new food product.
- To develop value-added healthy food product and determine their health benefits.
- To determine the sensory evaluation of the product.
- To determine the shelf life and cost of the prepared food product.

Lifestyle modifications and the recent push for healthier drinks have contributed many disorders to people, and also, these "healthier" drinks do more harm than good. Nowadays, beverages come with many unhealthier ingredients, and they are more like flavoured fruit drinks. These drinks have taken out the natural sugars and added artificial sweeteners. This could end up being worse for you because of the negative associations with sweeteners like aspartame. Considering this, the rose cordial is prepared using natural sugar, which is a better choice because the body digests it slowly. This makes you feel full for a longer time and doesn't cause the sugar levels in the body to increase rapidly. However, artificial sweeteners are digested quickly and cause your blood sugar and insulin levels to increase. The main ingredient used is rose which has many

medicinal properties, and it also contains oranges and lemons, which are a good source of many vitamins and minerals. Two samples were prepared and were evaluated by a panel of 5 judges using the ' Nine-point Hedonic Scale ' for organoleptic properties. The observations were recorded and tabulated.

Sensory evaluation showed that sample 2 was the highest in scores.

Shelf life is evaluated under refrigerated temperature for a storage period of 30 days. The product was found to be stable, with a shelf life of 30 days. The average cost of the product based on dry ingredients is Rs.75 for 1L of the product.

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