



Product Development of “Ready to Serve Drink Instant of Lemon Powder”

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1. Ready to serve beverage

Fruit beverages and drinks are one of the popular categories of beverages that are consumed across the globe. The fruit beverages and drinks are easily digestible, highly refreshing, thirst quenching, appetizing and nutritionally far superior to most of the synthetic and aerated drinks. In recent past the consumption of fruit based beverages and drinks has increased at a fast rate. Fruit juices or pulp used for the preparation of these products are subjected to minimal processing operations like filtration, clarification and pasteurization. The fruit juice or pulp, are mixed with ingredients like sugar, acid, stabilizers, micronutrients and preservative to develop beverages and drinks. There are various categories of fruit juice or pulp based beverages and drinks. Natural fruit juices, sweetened juices, ready-to-serve beverages, nectar, cordial, squash, crush, syrup, fruit juice concentrate and fruit juice powder belong to the category of non-alcoholic and non-carbonated beverages. Beverages can be defined as “any fluid which is consumed by drinking”. It consists of diverse group of food products, usually liquids that include the most essential drink “water” to wide range of commercially available fluids like fruit beverage, synthetic drinks, alcoholic beverage, milk, dairy beverages, tea, coffee, chocolate drinks etc. Despite differences in their properties one common feature that exists in all beverages is their ability to act as thirst quencher. In simple words beverages can be defined as “liquid which is essentially designed or developed for human consumption”. The beverages are rarely consumed for its food value but it is vital for life. Although their prime role is to fulfill the human need but these are part of our culture. However there are important pre-requisite for beverages:-

- All are made from food ingredients
- All are subject to pure food law
- Consumed in enormous quantities – sometimes safer than potable supply.

2. Lemon

The lemon is rounded and slightly elongated, it belongs to the family of citrus fruit and therefore it shares many of the characteristics of other species of citrus, as for instance the thick skin. The pulp is pale yellow, juicy and with an acid flavour; it is divided in gores. The skin is yellow and specially bright when it is ripen.

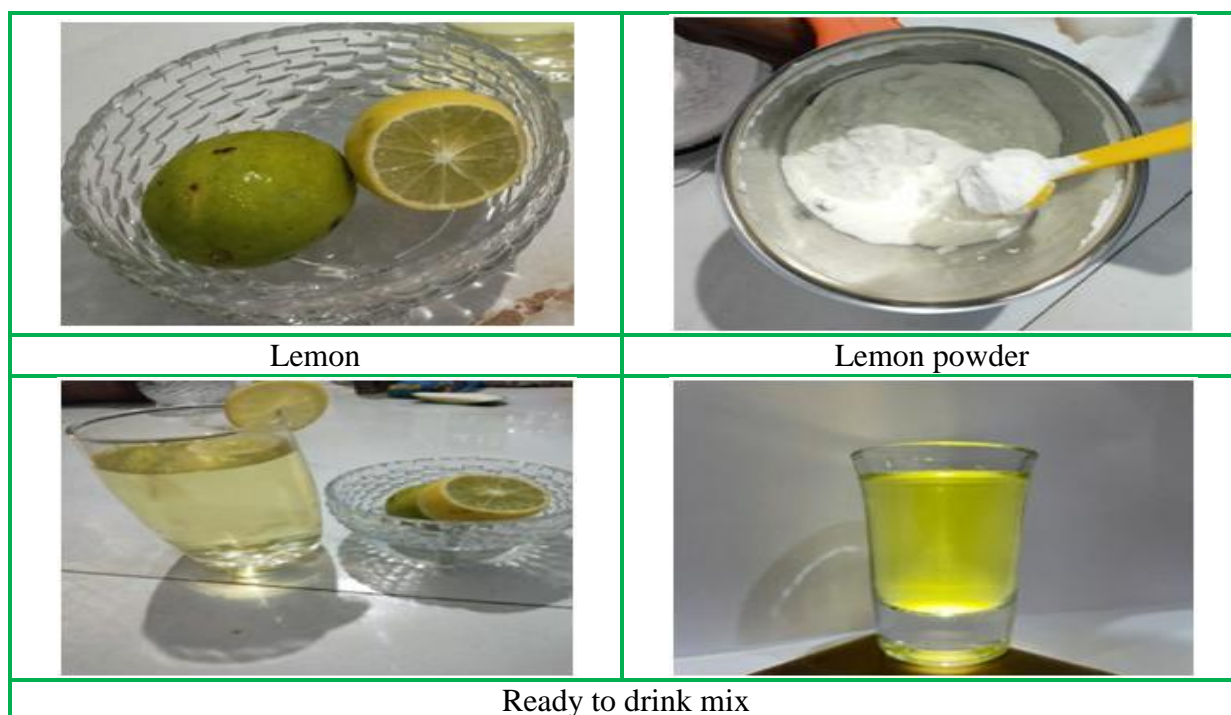
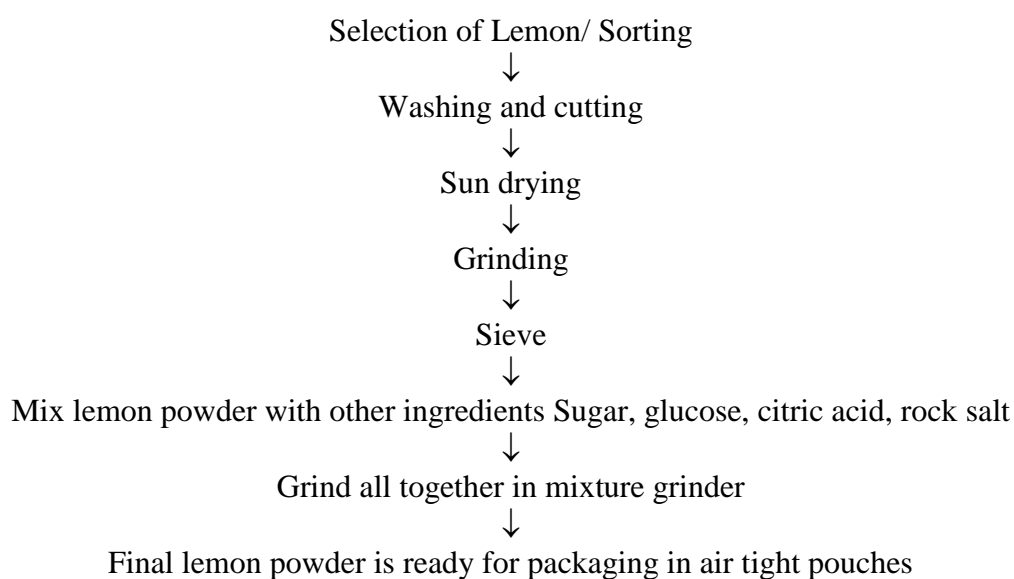
It is used fresh for cooking, and its juice is used in the industry for processed foodstuffs. For the pharmaceutical industry it is the raw material for many medicine manufactures, and at home it is used for different homemade remedies.

Nutrition and eating- The lemon has multiple properties: it reinforces the immunological system, it revitalizes, it activates the calcium metabolism for bones and teeth, it cures haemorrhages, it rejuvenates and it helps in sliming diets. Nevertheless, as a very energetic fruit, it must not be given to elderly people and those in acute nervous condition.

3. Lemon Powder

The lemon (*Citrus lemon*) is a species of small evergreen tree in the flowering plant family Rutaceae, native to South Asia, primarily Northeast India (Assam). Lemons are a popular fruit that people use in small quantities to add flavor to food. However, they rarely consume them alone due to their intense, sour taste. Lemons give flavor to baked goods, sauces, salad dressings, marinades, drinks, and desserts, and they are also a good source of vitamin C. One 58 gram (g) lemon can provide over 30 milligrams Trusted Source (mg) of vitamin C. Vitamin C is essential for health, and a deficiency can lead to health problems. The early explorers knew this and took lemons on their long voyages to help prevent or treat scurvy, a life threatening condition that was common among sailors. This article looks at the nutritional content of lemons, their possible health benefits, ways to use them in food.

Processing Flow Chart of Lemon Powder



Nutritional Value of Lemon Powder

S.NO	NUTRITIONAL VALUE	Per 100 g
1	Energy	34.6k cal
2	Carbohydrate	6.6 g
3	Fat	0.88 g
4	Protein	0 g
5	Vitamin D	17.77 mg

How to use lemon powder:- Drinking water alone will keep you hydrated and skin supple, but adding lemon powder will give you skin a glowing boost. The details of materials used and methodology employed for the Development of ready-to-serve drink.

Take 200 ml of water and dissolve 1TBSP of lemon powder Substitute the lemon powder in any recipe that calls for lemon juice, lemon powder add extra flavor to many backed recipe without adding extra liquid. The flavor is more intense then fresh lemon juice.

Health Benefits of Raw Lemon Powder:

- Lemons are an excellent source of vitamin C and flavonoids, which are antioxidants.
- Antioxidants help remove free radicals that can damage cells from the body.
- These nutrients can help prevent diseases and boost health and wellbeing.
- Here some of the possible benefits of consuming lemons.

a) Lowering stroke risk: Ischemic stroke is the most common type of stroke. It can happen when a blood clot blocks the flow of blood to the brain. A 2019 population study Trusted Source showed that long term, regular consumption of foods that contain flavonoids might help protect against cancer and cardiovascular disease. However, the study indicated that people who smoked or consumed a lot of alcohol were less likely to benefit.

b) Blood pressure: The role of lemon in this improvement and to discover whether consuming lemon can help reduce blood pressure since walking daily can also lower blood pressure.

c) Cancer prevention: Lemons and lemon juice are an excellent source of the antioxidant vitamin C. Antioxidants may help prevent free radicals from causing cell damage that can lead to cancer. However, exactly how antioxidants can help prevent cancer remains unclear.

d) Maintaining a healthy complexion: Vitamin C plays a vital role in the formation of collagen, the support system of the skin. Sun exposure, pollution, age, and other factors can result in skin damage A 2014 mouse study suggested that either eating vitamin C in its natural form or applying it topically can help prevent this type of damage.

e) Preventing asthma: People with asthma who consume higher amounts of vitamin C and other nutrients when they have a cold may experience fewer asthma attacks, according to one review. The authors found evidence that vitamin C also benefitted people with bronchial hypersensitivity when they also had a common cold.

f) Increasing iron absorption: Iron deficiency is a leading cause of anemia. Pairing foods that are high in vitamin C with iron-rich foods maximizes Trusted Source the body's ability to absorb iron. However, a high intake of vitamin C can trigger Trusted Source gastrointestinal problems in people who are taking iron supplements. For this reason, it is best to obtain iron from dietary sources, such as beef liver, lentils, raisins, dried beans, animal meats, and spinach. Squeezing a lemon juice onto a salad containing baby spinach leaves can help maximize the intake of both iron and vitamin C.

g) Boosting the immune system: Foods that are high in vitamin C and other antioxidants may help strengthen the immune system against the germs that cause the common cold and the flu. One review found that, while vitamin C supplements do not appear the reduce the incidence of colds in a population, they may help reduce the length of time a cold lasts. Vitamin C may also help boost immunity in people who are undergoing extreme

physical activity. Squeezing a whole lemon into a glass of hot water with a large spoonful of honey makes a soothing drink for someone with a cough or cold.

h) Weight loss: Rodents who consumed lemon peel phenols with a high fat diet for 12 weeks gained less weight than those who did not consume lemon. Those who followed the lemon detox diet experienced greater improvements in insulin resistance, body fat, BMI, body weight, and waist-hip ratio than those on the other diets. Further research is needed to confirm whether lemon can contribute to weight loss, and if so, how. Vitamin C is an essential nutrient and an antioxidant.