

## Commercial production of mango concentrate: A review

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### Abstract

Mango concentrate is the concentrate mango juice obtained from the processing of various varieties of mangoes. The processed juice concentrate has enhanced shelf life & has significant export potential. This product can further be used to produce other products like mango beverages- Frooti, Mazza, Slice, Tropicana etc. The canned mango concentrate has about 2 years of shelf life without cold storage. Canned mango concentrate is also consumed as a fruit juice and in the processing of various delicious mango drinks in hotels or restaurants.

In India Totapuri or Neelam mangoes are used for the production of mango concentrate. The total process is done with modern equipment and concentrates are aseptically packed or canned for a longer shelf life and storage.

**Keywords:** Mango Concentrate, Totapuri, Neelam, Equipment, Aseptic, Canned

### 1. Introduction

Mango concentrate is prepared by extracting the pulp obtained from mature ripe mango. The ripe fruit is processed in excellent conditions by suitable means according to quality standards.

Mango concentrate is widely used in the food & beverage industry. It is prepared from a variety of mangoes which are ripened under controlled conditions. It is used for its further conversion into juices, nectars, drinks, jams, and many beverages. Mango concentrate is an important ingredient in the pudding, bakery fillings, ice creams, yogurt, and confectioneries. Main varieties of mango include Totapuri and Neelam.

#### • Health Benefits of Mango Concentrate-

Mango concentrate is a rich source of potassium, vitamin-C & vitamin-A along with antioxidants too.

1. The presence of potassium improves nervous system & quality of blood.
2. Mango juice concentrate has antioxidants & phenolic compounds in plentiful amounts. They have anti-carcinogenic activity & help to prevent various cancers exclusively breast, colon & prostate.
3. Antioxidants help to maintain healthy & glowing skin.
4. Vitamin-C helps to improve immune system and shielding our body from
5. Cold, flu as well as respiratory disorders.
6. Vitamin-A, beta-carotene, alpha-carotene & cryptoxanthin protect our vision & oral health.
7. It is a rich source of iron so the doctor prescribes pregnant women or anemic patients to intake it.

#### • Variety Of Mangoes Used For Mango Concentrate

**Totapuri** – Totapuri mangoes are famous mango found in Andhra Pradesh. The Totapuri mango is also grown in the Indian state of Karnataka & Tamil Nadu. These mangoes are golden yellow in color. It has a parrot beak point end so it is called Totapuri as Tota means Parrot. These mangoes vary in length but generally 7 inches long.



**Fig 1:** Totapuri mango

This variety of mango contains such as vitamin- A, E, C & B5. Some of this vitamin for adding a glow to the skin & its antioxidant enzyme provide nourishment to the body while increasing resistance power.

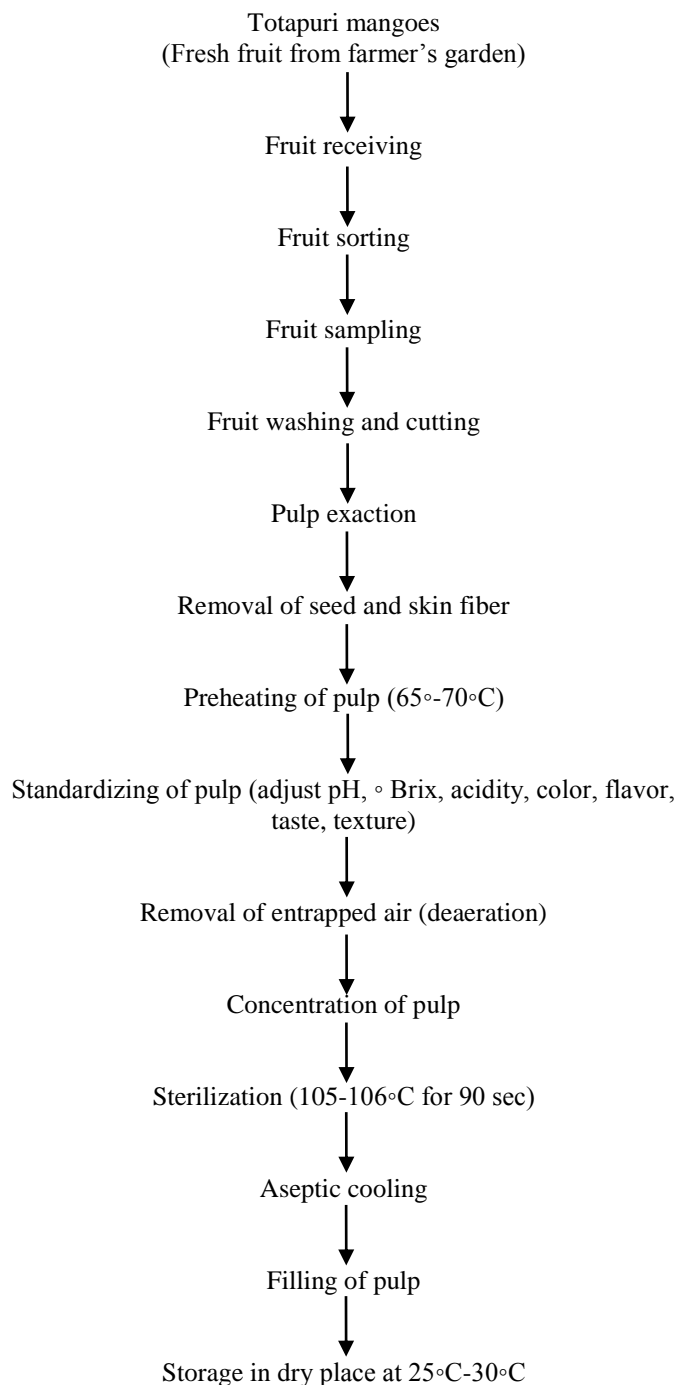
**Neelam-** Neelam Mangoes are known for their beautiful shape, taste & divine floral aroma. The Neelam is a popular choice and is renowned for its availability.



**Fig 2:** Neelam mango

The Neelam is highly relished by mango fans across the globe. However, it is primarily grown in Andhra Pradesh, Karnataka & Tamil Nadu. This mango is large in size & oblong shaped with pointed base & golden yellow color.

### 1.1 Processing flow diagram of mango concentrates commercially-



### 1.2 Equipment Required Stepwise



Fig 3: Receiving section (mangoes are received here)



Fig 4: Sorting section (ripe mangoes are sorted out here)



Fig 5: Washing section (removal of dirt or other extraneous matters)



**Fig 6:** Cutting belt (mango tips are cut here)



**Fig 7:** Destoner (peel separation and pulp recovery)



**Fig 8:** Pulper (making of smooth pulp)



**Fig 9:** Mixing tank (mixing of additives)



**Fig 10:** Separator (separation of black specks)



**Fig 11:** Preheater (enzymatic deactivation)





Fig 12: Evaporator (excess air removal & concentration of juice)



Fig 13: Sterilization (reduction of microbes)



Fig 14: Aseptic packaging

Table 1: Aseptic Totapuri Concentration Standard Value

Brix (conc. at 20°C)	28±1
Acidity (% of citric acid)	0.80 minimum
pH	3.5-4.4
Brix-Acid ratio	23-35

**1.3 Packaging & storage**

**Bags & Cans** - Aseptic fruit concentrate is filled into pre-sterilized high barrier bags placed in steel drums internally painted with food grade lacquer drum tightly closed to ensure

no free space inside the drum. Sometimes these mango concentrates are canned which is easier to carry or transport.

**Storage for Bags-** Bags should be stored at cool & dry place below 20°C. preferably below 15°C for extended shelf life.

**Storage for Cans-** Stored in ambient temperature in cool and dry place.



Fig 15(a): Plastic Bag



Fig 15(b): Bottle



Fig 15(c): Plastic Jar



Fig 15(d): Can

Fig 15: Various Packaging of Mango Concentrate

**1.4 Shelf Life**

**Aseptic:** - 18 months from the date of manufacturing when stored below 15°C.

**Frozen:** - 24 months from the date of manufacturing when stored -18°C.

**Canned:** - 24 months of manufacturing.

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