

Preparation of value - added product through vegetables

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Introduction

In the terms of global vegetable production, India has surpassed China (191.77 Mt.) to take second place (National Horticulture Board, 2019-20, Second Advance Estimate). The majority of vegetables have a short shelf life due to their highly perishable nature. Vegetables may be processed, stored, and marketed during the off-season to reduce post-harvest losses during the peak season and to avoid market excess. Just to mention a few, value added products ready-to-cook (RTC) vegetables, tomato soup, jam, candy, canned peas, tomato sauce and ketchup, puree and paste, frozen and dehydrated products of capsicum, cabbage, and French beans; oil, oleoresin, powder, pickles, etc. of ginger and turmeric can all be made from various vegetables (Nath *et al.*, 2016).

Affordable Processing Methods for Small and Marginal Farmers

1. Preparing Affordable Tomato Powder

It is produced from ripe, mature fruits. This product is typically used to make a variety of tomato-based goods, including juice,

soup, ketchup, puree, and chutney. Below are many procedures for making tomato powder:

- Take tomatoes that are fully ripe and wash them in clean water.
- Slices should be between 5.0 and 7.0 mm thick.
- Place the slices in the aluminium trays in a single layer.
- Slices should be dried in a cabinet dryer at 60°C for 7-8 hours until they are crisp.
- Slices that have been cooled should be grind into powder using a laboratory grinder.
- Either place the powder in flexible plastic packaging or airtight plastic containers.
- For later usage, keep the product in a cool, dry, and dark place.

2. Tomato Ketchup

It is prepared from strained tomato juice or pulp and spices, salt, sugar and vinegar, with or without onion and garlic, and contains not less than 12 per cent tomato solids

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and 25 per cent total solids. Different steps for preparation of tomato ketchup are shown below:

Procedure

- Wash the tomatoes in clean water.
- Blanch for 20 minutes in boiling water. Remove the outer layer and extract the juice/pulp.
- Add one-third of the amount of sugar to the extracted tomato juice and begin heating.
- Add all the necessary ground spices that have been tied in a muslin cloth (spice bag) to the pulp and continue heating.
- Heat the masses until the pulp volume is one-third of what it was initially remove the spice bag and stop heating.
- Add the vinegar, salt, and the remaining sugar; and thoroughly combine.
- To properly mix the ingredients, reheat them once more.
- A calculated amount of sodium benzoate should be added to the product.
- Sterilized bottles should then be filled with the product, which should then be allowed to cool until it reaches a temperature of about 40°C.

- The bottles should then be sealed and labelled.

Recipe for Tomato Ketchup

Ingredients	Amount	Ingredients	Amount
Tomato juice	1 liter	Sugar	200-250g
Salt	10 g	Onion	20 g
Garlic	1 g	Cinnamon	1 g
Black pepper	1 g	Ginger	1 g
Clove	2 No	Red chilli	5 g
Vinegar	5%	Sodium benzoate	750M (0.75 g/liter)



Tomato Ketchup

3. Ginger Paste

Procedure

- Take a soft, fresh, and fiber-free variety of ginger.
- Using a mixer grinder, peel the rhizomes and make a paste.
- Add 3-5% of common salt to the paste and carefully combine. If necessary, a small amount of water can be added to get the correct consistency.
- The entire mass is heated for 10 to 15 minutes while being constantly mixed.

- The paste is then filled into a glass jar or plastic container after being mixed with acetic acid and KMS.

Recipe for ginger paste

Sr. No.	Raw materials	Quantity
1.	Ginger pulp	1 Kg
2.	Salt	30-40 g
3.	Acetic acid	15-20 ml
4.	KMS	1 g
5.	Water (if needed)	100/kg



Ginger Paste

Conclusions

Vegetables are very important for human health, as well as rich in minerals and vitamins. They preserving and increasing their self-life, as the process of raising self-life may result in an increase in taste and flavour. The processing/ Value addition of vegetables also contributes to the country's economy because it has export potential. Value addition is one of the most apparent techniques for reducing post-harvest losses in vegetable crops.



Dehydrated products

3. Dehydrated vegetable products

- Selection of fresh vegetable.
- Sorting and grading of vegetables.
- Washing of vegetable.
- Peeling and cutting of vegetables.
- Blanching and spreading on flat tray.
- Dehydration with occasional turning.
- Sweating.
- Packing and storage.