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## Processing and value addition of Solanaceous vegetables: A review

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### Abstract

The development of vegetable product is always vital as it is assistance is mentioning lengthy life of the vegetables and it additionally beautify the splendid of vegetable by way of the addition of value in it. This paper consists of processing and charge addition of various vegetables. In India there are various styles of beneath-applied vegetable are to be had because of the reality they may be not using nicely although they have got very excessive nutritive price. Those flora have excessive potential in retaining sustainability in terms of economy of U. S. A. Some of the veggies are beneath estimate in phrases of processing even though they have got high processing ability. This assessment deliver information about processing of a number of the fundamental vegetable plants and it also cover processed made of this veggies.

**Keywords:** Value addition, vegetable, sustainability

### Introduction

India is the one of the pinnacle greens producing U. S. A. In the worldwide. Greens are specific source for nutritional nutrients collectively with vitamins, fibers and minerals. In glowing vegetable the moisture content fabric is extra than 80% (Orsat *et al.*, 2006) <sup>[60]</sup>. Smooth veggies are greater nutritive than processed ones. Greens whose roots and tubers are devour are first-rate deliver of energy, natural vitamins and minerals. In green leafy veggies like spinach (*Spinacia oleracea*), amaranthus (*Amaranthus viridis*), bathua (*Chenopodium album*), mint (*Mentha spicata*) and plenty of others. Together with carrot are wealthy supply for Beta carotene that is an essential antioxidant. Beta carotene is the maximum essential precursor of nutrition A. Nutrients A is vital for the everyday growth. Deficiency of weight-reduction plan A decrease levels inside the blood and coffee stage in serum. In keeping with capita intake of vegetable in India is decrease than each day requirement. It takes place because of excessive put up-harvest losses (20-forty %) of culmination and greens in India. It's miles determined that the cutting-edge repute in availability of vegetables most effective meet half of of the requirement of nutrients and minerals. Therefore, it is critical to strategies the to be had greens so it's miles vital to adapt the system of processing of vegetables via developing such techniques, which is easy to operate as well as can also produce economic extremely good product. This will additionally make sure the supply of vegetable in offseason anywhere inside the one year. In India much less than 2% of the vegetables from popular production is processed and in Brazil the 70% and in Malaysia spherical eighty three %. One of the most common strategies for renovation of veggies is dehydration. Heat air drying through conventional tray drier or vacuum drier and solar drying can be used for dehydration of greens. Dehydrated forms of veggies are consumed in severa paperwork, without affecting its nutrient value.

Nowadays cultivation of fruits and greens are very crucial. As it allows in generating employment at some point of the one year, it extensively utilized as a medium for forex. End end result and vegetables have immoderate nutritive rate, in order that they play important function to fight starvation. Fruits and greens are suitable supply for vital minerals, nutrients, dietary fiber, deliver complicated carbohydrates and proteins.

Powdered veggies such as tomato (*Solanum lycopersicum*), carrot (*Daucus carota* subsp. *Sativus*) and leaves of fenugreek (*Trigonella foenum-graecum*) required easy era for education.

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And they're utilized in incorporated in traditional meals preparations, in this manner every value is brought inside the product and nutrient charge additionally maintained. Because of put up harvest losses of vegetables because of bad control, the losses of farm produce are very immoderate. In studies it turned into recorded that 75,000-1,00,000 crore consistent with yr losses are motive due to publish harvest manipulate of food commodities.

In case of vegetables and fruits including mango (*Mangifera indica* L.) and amla (*Emblica officinalis* L.) pickling is accomplished. Pickling of cucumber is made in Africa, Asia, Europe, and Latin the united states (Steinkraus 2002) [46]. Khalpi is a cucumber pickle famous all through summer season months in Nepal (Dahal *et al.*, 2005) [57]. Range of strategies is used for the purpose of pickling, but the most common technique is placing the vegetable in 5% salt.

It is able to be visible that during the manner of storage of merchandise in canned there may be low lack of Ascorbic acid (<15%) compare to that of fresh and frozen merchandise. In several check that there may be no statistically full-size losses of ascorbic acid arise during garage of canned green beans at room temperature, and one study confirmed a moderate lack of 6% after 18 months of garage of canned green beans (Marchesini *et al.*, 1975) [54], (Elkins 1979) [27] and (Fadel and Miller 1983) [2].

In India maximum vegetables are processed at the way to prevent it from post-harvest losses. It additionally helps the greens to be avoided from now not best physiological or chemical spoliation it moreover saves it from microbial spoilage. It is vital to prevent veggies from spoilage due to moisture, enzymes or packaging. Basically, charge addition is the procedure to transform vegetable produce to a more valuable product from its unique country. The value of modified product is known as as value addition. In these days's international vegetable farming is critical supply of employment because it gives employment at a few level inside the year. And adding fee is likewise very critical for employment. In time period of nutrient greens are essential supply of nutrient and permits in preserving strong metabolism.

Due to the fact 2011 the global vegetable processing enterprise has grown and also anticipated to develop after 2020. In growing countries including in India & Afghanistan due circulate increase in industrialization which leads them to benefit a tremendous of leaving. Which include appropriate meals with proper fitness. But in some superior usa, like China, usa the processing of vegetable is declining as they choose glowing produce is being healthier than there processed product. As easy greens are healthier than their processed product.

### Processing and Value addition in solanaceae vegetables

#### Potato (*Solanum tuberosum*)

Potato (*Solanum tuberosum*) is a tuberous, starchy herbaceous annual vegetable belong to circle of relatives Solanaceae. It's far global fourth largest food crop observed after maize, wheat and rice. It's also called king is greens. It's miles staple

meals in many parts of the world grown for its fit to be eaten tubers and contributes appreciably to the sector's caloric consumption ("PotatoPro," 2017) [64] contributing round 2% of the arena's dietary electricity deliver. Made from potato that's commercially use as famous meals is potato chips.

#### Potato chips

The maximum desired kind of potato for the education of chips are Kufri Chipsona-1 and Kufri Chipsona-2. This variety is right for the training of potato chips. Potato chips are thin, fried, baked popular able to eat snacks used both in domestic also as in nutriment at restaurants (Wadagavi *et al.*, 2017) [94]. 100 g potato chips offer approximately 547 energy of strength with a fat content material of 37.47g, total carbohydrate 49.74 g, protein 6.56g alongside Sodium (525 mg) and potassium (1642 mg). As in line with Statista market Forecast," 2019). Instruction of potato chips include following steps: fresh potato unfastened from any deformities are taken and peeled then washed. Then the washed potatoes sliced in 1. Five-2.Zero mm into slices. Then the surface starch is removed with water. Then the sliced are blanched in dilemma at 60-80 °C for 2-3 min. Then surface dry them. Then fry the dried slices at a hundred and eighty °C till they turn out to be golden. Acquired chips are salted or spiced and packed in baggage in the presence of nitrogen fuel (Singh *et al.*, 2016) [96].



#### Canned potatoes

For the reason of Canning of potatoes, the preferred potatoes are immature and small. In case of large tuber, first they reduce into small pieces then them canned (Thapa and Thapa, 2019) [89]. The processes of canning encompass following steps: fresh potato peeled and wash. Then blanching is carried out for 4-five min of potatoes. The blanched potatoes then filled in can at the charge of 500g per A21/2 length can alongside 2% brine leaving about zero.8 cm. Now, the cans are disclose to heat till the temperature reach eighty °C which help in elimination of air from it. In final step the cans are sealed and sterilized at 10 psi for forty five mins and cooled (Singh *et al.*, 2016) [96].



### Tomato (*Solanum lycopersicum*)

Tomato is ranked 2d most of the greens in terms of production. Averagely approximately 10,800 tons of tomatoes are exported yearly from India. Nearly 7.1 million tons of tomato is produced annually from five. Four lakh hectares in India. Tomatoes are normally come under vegetable because of its low sugar content material. It is right source of vitamins, minerals and different beneficial substances like fiber essential for good health. It incorporates over 80 vitamins useful to human (Potty, 2009) [65]. It carries lycopene and beta-carotene pigment. Potty (2009) [65] emphasised that lycopene is likewise linked to improve skin health by using distinctive feature of its capability to shield towards unwanted UV ray publicity. Price addition to tomato with processing may be finished through changing them in different product through different processes these merchandise are Tomato energy, Tomato juice, Tomato puree and Tomato ketchup.

### Tomato powder

The variety which is used for the manufacturing of powder is us of a tomato (Namdhaari). It located within the decided on vicinity. Tomato first washed then seeds of the fruit is removed then allow them to dry in sun. Then the dried tomatoes were powdered. Merchandise of tomato standardized using powder of tomato (Ramadas and Thilagvathi, 2011) [92].



### Tomato juice

For the guidance of tomato juice fully ripe nicely-developed coloured tomatoes are use. They washed very well then they trimmed then steamed then with the help of knives cut them in small portions. The pieces which might be beaten are

heated inside the steam jacketed kettle till they end up tender. Then the pulp is eliminated from the tomatoes. It's going to separate juice from seeds with the help of sieve. Then upload sugar with salt@ 1% and heated to 85-ninety°C. Then bottle the recent juice and sealed immediately and processed sterilized in boiling water for about 30 minutes and cooled (Grandillo *et al.*, 1999) [37].



### Tomato puree

For the instruction of puree, the juice need to concentrate below vacuum to about 9-12% general stable to get tomato puree. Then the product is stuffed in bottles and placed the bottles in boiling water for 30 min and then allow them to cool (Freeman *et al.*, 2011) [30].



### Tomato ketchup

For the training of ketchup, the juice of tomato is used. The juice concentrate with salt, sugar, spices, and many others. The spices that are use cloves, cardamom, pepper, cinnamon and different ingredients etc. Are tied loosely inside a muslin material and positioned in boiling juice in steam Jacketed Kettle. Later sugar, salt and acetic acid are introduced. Then it is concentrated to twenty-eight to 30% solids in which 12% are tomato solids. The final product is then preserved by using the addition of sodium benzoate @ 750 ppm. Then ketchup is crammed in warm smooth dry bottles and processed in boiling water for 30 min then cooled at room temperature.



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