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From Tomato to Table: Nutrition through Value Addition

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One of the most widely planted and nutritionally important vegetable crops in the world is the tomato (*Solanum lycopersicum L.*), which comes in second place globally behind potatoes. The tomato's wealth of vitamins, minerals, dietary fibre, and antioxidants, particularly lycopene, contributes greatly to human health and nutritional security. All year long, both fresh and processed tomatoes are consumed, making them an essential component of a balanced diet. However, fresh tomatoes can suffer large post-harvest losses due to their extreme perishability. Value addition by processing into products such as powder, soup, juice, sauces, paste, ketchup, chutney, dehydrated, and diced forms ensures nutrients are available year-round, extends shelf life, and reduces losses. These value-added tomato products improve health outcomes and diversify diets by having antioxidant, cardioprotective, anti-cancer, bone-strengthening, skin-protective, and blood sugar-regulating properties. As a result, tomato value addition emphasises its importance for food and nutritional security and is a long-term strategy to enhance health, nutrition, and financial gains.

Introduction

The tomato (*Solanum lycopersicum*) is one of the most important and widely cultivated vegetable crops worldwide. It ranks second among vegetables, after potatoes, and is highly valued for its excellent nutritional and health-promoting properties. Tomatoes are rich in vitamins, minerals, dietary fibre, and antioxidants, especially lycopene, which dramatically reduces the risk of chronic diseases. Due to their year-round consumption in both fresh and processed forms, tomatoes are an important source of essential elements in the human diet. The crop is known by several names worldwide, including Automate in Mexico, Pomodoro in Italy, Tomatis in West Africa, Tomato in Indonesia, and Tomates in Spain and France. Because they are high in iron, phosphate, carbohydrates, vital amino acids, and vitamins B and C, tomatoes are an essential component of a balanced and healthful diet. Fresh tomatoes are commonly used in salads, while cooked tomatoes are often used in soups, sauces, and meals that include vegetables, meat, or fish. Tomatoes are also processed into high-value, economically relevant products such as juice, sauce, puree, canned tomatoes, and dried forms since they are perishable. In addition to lowering post-harvest losses, these processed goods provide year-round nutrient availability, underscoring the contribution of tomatoes to enhancing food diversity and nutritional security.

Scientific classification

Kingdom: Plantae
Order: Solanales
Family: Solanaceae
Genus: Solanum
Species: *Solanum lycopersicum* L.

Botanical description

Habit: Growing to a height of one to three meters if supported, it can be bushy (determinate) or vine-like (indeterminate).

Stem and leaves: Fine hairs cover the stems and leaves, which display the leaf axils where branches and flowers appear. The leaves have a pungent aroma, are irregularly pinnate (like feathers), and are grey-green in colour.

Roots: Has a taproot system.

Flowers: Cymose clusters, or inflorescences, are small, yellow, five-petaled, and often six-merous (parts in sixes).

Fruit: A fleshy berry, smooth or furrowed, changing from green to red, yellow, or orange when ripe, containing many small, hairy, light brown seeds.

Value-Added tomato Products

A few tomato-value-added products are as follows:

1. Tomato powder
2. Tomato soup
3. Tomato sauces and ketchup
4. Tomato juice
5. Tomato chutney
6. Tomato paste
7. Dehydrated tomatoes
8. Diced tomato

Nutritive value

The nutritional content of a tomato is shown in the table below.

Table 1: Nutritive value of tomato per 100 g

Parameters	values
Energy	18-20 kcal
Carbohydrates	3.5-4.0 g
Lipid	0.2-0.3 g
Total protein	0.8-1.0 g
Total sugar	2.5-3.5 g
Vitamin C	12-20 mg
Vitamin A	400-500 IU
Vitamin B1	0.04 mg
Vitamin B2	0.02 mg
Calcium	10-12 mg
Phosphorus	20-25 mg
Potassium	230-250 mg
Lycopene	2.5-4.5 mg

Health benefits

The tomato (*Solanum lycopersicum*) is a great functional food for enhancing nutrition and general health when ingested in value-added forms as juice, puree, sauce, paste, powder, ketchup, soup mix, and dried goods. Because they are high in vitamins, minerals, dietary fibre, and antioxidants, especially lycopene, regular consumption of these tomato-based products offers significant health advantages.

Cancer: Lycopene exhibits strong antioxidant activity, and its concentration in blood and tissues shows an inverse association with the incidence of breast and prostate cancers.

Cardiovascular Health: Higher levels of lycopene in adipose tissue have been shown to offer protection against heart disease.

Tomatoes support healthy bones: Tomatoes are a good source of calcium and vitamin K, which are vital elements for fortifying and making small repairs on the bone tissue and bones

Skincare: Lycopene, a component of several of the most expensive face cleansers, is abundant in tomatoes. An additional component in vitamin C found in tomatoes helps the immune system.

Diabetes: It greatly aids diabetics in controlling their blood sugar levels.

Conclusion

Tomatoes (*Solanum lycopersicum* L.) are a popular and nutrient-dense produce; their extreme perishability results in large post-harvest losses. Value addition increases shelf life, lowers losses, and guarantees year-round nutritional availability via processing into goods, including powder, juice, sauce, paste, and dried forms. These value-added products show the significance of tomato value addition in food and nutritional security by increasing dietary diversity, improving health benefits, and offering greater financial benefits.

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