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Tamarind: Nutritional, Health and Culinary Uses

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Tamarind, or *Tamarindus indica* as it is formally known, is a tropical tree that is indigenous to southern Asia and Africa. Its brown, pod-shaped fruits are prized for their culinary versatility all over the world and produce a sweet, tangy pulp. There are numerous use for the tamarind tree's leaves, beans, bark, and wood. The dark pods' sticky content tastes both sweet and sour. It adds acidity and tang to desserts, drinks, syrups, sauces, candies, and meals like pad Thai and chutneys. It is an excellent whole-food item because it is a low-glycemic fruit that has a lot of healthy elements. While its leaves and petals add flavor to salads, soups, stews, and curries, tamarind seed flour is used in baking.

In tropical locations, particularly in Bangladesh, India, Sudan, and Nigeria, the tamarind plant is also utilized in traditional or folk medicine. Among many other advantageous plant ingredients, it is well-known for its nutritional value, particularly its protein, carbs, vitamins, and minerals.

Tamarind fruit's functional components include

1. Minerals, vitamins, dietary fiber, and various health-promoting volatile chemical compounds.
2. Non-starch polysaccharides (NSP) or dietary fiber, including gums, hemicelluloses, mucilage, pectin, and tannins, are abundant in its sticky pulp. Fruit pulp contains 5.1, or more than 13%, of dietary fiber per 100 g. Dietary fiber, also known as NSP, gives food more volume and promotes better bowel motions, which helps avoid constipation. Additionally, the fiber binds to the poisons in the diet, protecting the colon mucosa from substances that cause cancer and the toxic burden on the liver.
3. The recommended daily value (DV) for fiber is 22% in a full cup of tamarind pulp, compared to 11% in a half-cup. Tamarind can assist fulfill dietary fiber requirements. Fiber, which is present in plant-based meals, aids in digestion, helps avoid constipation, and helps regularize bowel movements. A high-fiber diet may also help reduce the risk of diabetes, heart disease, and several types of cancer, according to research.
4. Dietary fibers in the pulp help the colon expel "bad" or LDL by binding to bile salts, which are made from cholesterol, and reducing their re-absorption.
5. While lemon composes citric acid, tamarind is rich in tartaric acid. Tartaric acid gives a sour taste to food besides its intrinsic activity as a potent antioxidant. It, thus, helps the human body protect from harmful free radicals.
6. Tamarind fruit contains many volatile phytochemicals such as limonene, geraniol, safrole, cinnamic acid, methyl salicylate, pyrazine, and alkyl-thiazoles for the medicinal properties of tamarind.
7. This spice is a good source of minerals like copper, potassium, calcium, iron, selenium, zinc, and magnesium. Potassium is an important component of cells and body fluids that helps control heart rate and blood pressure. Iron is essential for red blood cell production and as a co-factor for cytochrome oxidases enzymes.

8. Moreover, it is abundant in a number of essential vitamins, such as thiamin (36% of daily needed levels), vitamin A, folic acid, riboflavin, niacin, and vitamin C. The human body uses many of these vitamins as co-factors for enzyme metabolism and as antioxidants.

Health Advantages of Tamarind

Brain Health: For optimal health, all of the B vitamins are necessary. They are particularly important for the brain and neurological system to operate correctly. B vitamins, particularly thiamine and folate, are abundant in tamarind. B12 is absent from tamarind, just like in other plants.

Reduction of Cancer Risk: Antioxidants can stop free radicals from destroying DNA in cells. Plants contain phytochemicals that have antioxidant properties. Beta-carotene is one of the several phytochemicals abundant in tamarind.

Reduces Pain: Although consuming tamarind pulp by itself does not reduce pain, there is evidence that extracts from other plant sections may be able to do so. For instance, tamarind seed extracts may be able to reduce the discomfort associated with arthritis.

Health of Tissue: With the exception of tryptophan, all of the necessary amino acids are present in considerable concentrations in tamarind. It satisfies the World Health Organization's requirements for the optimal protein in terms of the other amino acids.

Combats Inflammation: Polyphenols and antioxidants found in tamarind may aid in the regulation of inflammation in the body. Because of its anti-inflammatory properties, it has long been utilized medicinally in various civilizations. According to researchers, tamarind has a solid foundation for usage in traditional medicine as a treatment for inflammatory disorders like arthritis and pain.

Heart Health: By halting the oxidative damage brought on by LDL cholesterol, tamarind's polyphenol, flavonoid, and antioxidant qualities may promote heart health.

Enhance Liver Function: Its capacity to enhance liver function is one of its possible health advantages. Protective polyphenols found in tamarind pulp improve liver health and function while also offering antioxidants that combat oxidative stress and raise glutathione levels.

Bone Health: Individuals who consume adequate amounts of magnesium have higher bone density than those who do not. Magnesium is abundant in tamarind. Additionally, it has more calcium than a lot of plant-based diets. Together with weight-bearing activity, these two minerals may help prevent bone fractures and osteoporosis.

Allergies: Tamarind may help lower cholesterol and is used in traditional medicine to treat sunstroke, constipation, and sore throats.

Chemical Composition of Tamarind

For one cup (120g) of raw tamarind pulp, the USDA offers the following nutritional data.

- Calories: 287
- Fat: 0.7g
- Sodium: 34 mg
- Carbohydrates: 75g
- Fiber: 6.1g
- Sugars: 46.6g
- Protein: 3.4g
- Potassium: 754mg
- Vitamin C: 4.2mg

Sugar makes up the majority of the calories in tamarind pulp. For most individuals, tamarind is still a valuable food because of its high vitamin content. Additionally, tamarind is utilized in sweetened beverages and candies.

How Tamarind is Used

One of the most popular ingredients in Indian, Middle Eastern, and Southeast Asian cookery is tamarind, which has a delicately sweet and sour flavor. Its pods are split open in some Indian homes, and fresh pulp is consumed as needed. A tiny piece of the pulp is soaked for

approximately ten minutes in half a cup of warm water before being used as a condiment. To make a thin sauce, use your fingers to swirl the pulp until it dissolves evenly in the water. Before using the juice in cooking, strain it over a filter or a thin cotton sieve.

Methods to Eat Tamarind

Raw: You can consume the pulp directly from the pod.

Paste: Tamarind paste is used in cooking and can improve the flavor of food.

Juice: Tamarind juice is a popular beverage, especially in tropical regions.

Candy: Tamarind is commonly made into candy, especially in South Asian cooking.

Condiments: Tamarind is added to sauces, chutneys, and dips to enhance their flavor.

Various Tamarind Forms

Fresh Pods: These are the raw pods that can be eaten after being peeled.

Concentrate: A syrupy, thick form used in beverages and cooking.

Pulp: Taken out of the pods and used to make food and beverages.

Paste: Made from concentrated tamarind pulp, paste is typically used in recipes.

Powder: Tamarind powder, which is used as a spice.

Ways to Use Tamarind

- Dal, a typical lentil-based Indian dish, can be flavored with tamarind.
- Prepare a traditional tamarind chutney to use as a condiment or dip.
- To produce a zesty salad dressing, combine tamarind paste, ginger, garlic, and soy sauce.
- For a more subtle taste combine barbecue sauce and tamarind sauce.
- To produce a stir-fry sauce for shrimp or chicken, use tamarind.
- Soups and Curries: Tamarind paste is commonly used to enhance the tangy flavor of soups and curries.
- Marinades: It is used in marinades to flavor and tenderize meats and vegetables.
- **Chutneys and Sauces:** Tamarind adds a tart and sweet flavour to a variety of chutneys, sauces, and dips.
- **Drinks:** Due to its refreshing flavour, tamarind is used in fresh water, tamarind juice, and several cocktails.