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A REVIEW PAPER ON TAMARINDUS INDICA

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ABSTRACT

Tamarind (Tamarindus indica) is a fruit-bearing member of the leguminous family and a potentially therapeutic plant. It is native to the subcontinent, has long been grown extensively in India, and is referred to as "imli" in Hindi and Urdu. Tamarind is a huge, long-lived tree that grows slowly and can reach a height of 24 to 30 meters even in extremely adverse weather conditions. In our nation, there are often two varieties of tamarind—one with a sweeter flavor and the other with a bitter one. Tamarind can thrive in a variety of climates and environmental changes. The essential ecological elements for its maximum yield are the right amount of warmth, sunlight, and moisture. Traditionally, plant materials have been utilized as medicine to treat illnesses and maintain health. One of the plants used in traditional herbal treatment is Tamarindus indica. The Leguminosae family (subfamily: Caesalpiniaceae) includes the tamarind species. Originally from Africa, this evergreen tree is now widely found in other tropical and subtropical regions of the world. The pharmacological characteristics of tamarind are described in Ayurvedic literature as accountable for the effectiveness of treatment. It is used to a variety of foods and drinks as a flavoring. Tamarind fruit has a mild antioxidant effect and is high in flavonoids and polyphenols. Vitamins, phytochemicals, and essential amino acids are abundant in tamarind.

KEYWORDS: Tamarindus indica; Caesalpiniaceae, leguminous family, Africa.

INTRODUCTION

The tamarind, or Tamarindus indica L. of the Fabaceae, subfamily Caesalpinioideae, is a staple meal throughout the tropics. It is a multipurpose tree, and almost every part of it serves a purpose, be it medicinal or nutritional. While tamarind is indigenous to tropical Africa, it has been introduced to and naturalized in over five countries globally.[1] It has long been grown on the Indian subcontinent and is said to be native there[2], where it is known as "imli" in Urdu and Hindi.[3] Since there is just one species in the genus Tamarindus—Tamarindus indica L., or "Tamarind"—it is a monotypic taxon. In addition to Cameroon, Sudan, Tanzania, and Nigeria, it grows wild throughout Africa. There are several types of Tamarindus indica, which can be divided into two categories: sweet and acidic. Since acidic tamarinds are common in many nations, they thrive in warm, sunny climates. Sweet varieties, however, are difficult to find.[4] Various components have been found to contain vital amino acids, proteins, lipids, carbs, tannins, phytochemicals, vitamins, and minerals. Phenolic chemicals found in tamarind include catechin, epicatechin, procyanidin B2, and other components such as mucilage, pectin, arabinose, xylose, galactose, glucose, uronic acid, tartaric acid, and triterpenes. It has a lot of vitamins B and C, which strengthen the immune system.[5] At its maximum potential, the tree can grow to a height of 25 meters and a crown diameter of 12 meters. The tamarind crop grows best in arid, dry regions, especially those that are vulnerable to prolonged drought.

Almost any setting since it can survive droughts lasting five to six months. The tamarind tree requires little upkeep and is easy to cultivate. It may live for 80–200 years, is usually free of serious pests and diseases, and can yield 150–500 kg of pods a year at age 20. Every season, the tree covers its branches with a profusion of curved fruit pods.[6]

PLANT PROFILE

❖ **Biological Source**

Tamarind consists of dried ripe fruits (freed from the brittle epicarp) of *Tamarindus indica* Linn., belonging to family Leguminosae.

❖ **Synonyms**

Imali, Puli, Chinch, Kolpuli, Amali

❖ **Images**

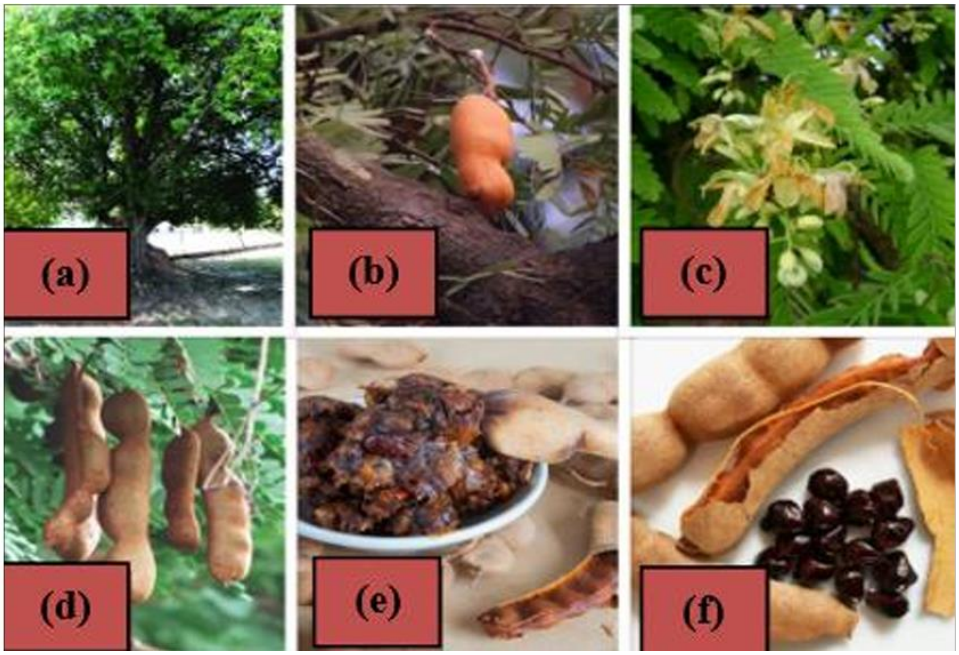

Fig 1: (a) Tamarindus indica tree (b) Stem bark of T. indica. (c) Leaflets, leaf and flowers of T. indica. (d) T. indica fruits. (e) Rusty-brown pulp of T. indica. (f) Irregularly shaped, shiny, and smooth seeds of T. indica

MORPHOLOGICAL CHARACTERISTICS

The tamarind tree can reach a maximum crown height of 12 to 18 meters, and it has a long lifespan and a medium growth rate. Around the crown, dense foliage creates an amorphous, vase-like look. Direct sunshine is ideal for the tree's growth. Sandy, acidic, clay, loam, and soil types with a strong resistance to drought are preferred. The evergreen leaves are naturally lobed and arranged alternately. The leaflets are naturally veined, bright green, elliptic-ovular, and shorter than 5 cm. In agriculture, trees are often trimmed to increase tree density and make fruit picking easier. As a tree ages, its branches droop from a single, central stem. At night, the pamphlets fold up. It is susceptible to frost because it is a tropical species.[13]

TAXONOMICAL CLASSIFICATION[12]

Kingdom: Plantae
Division: Angiospermae
Class: Dicotyledoneae
Order: Fabales
Family: Fabaceae(Leguminosae)
Subfamily: Caesalpiniaceae
Genus: Tamarindu
Species: T.indica

REVIEW OF LITERATURE

Sr no.	Pharmacological Activity	Model	Dose /concentration	Chemical constituent
1.	Antidiabetic and Hypolipidemic Activity	Rat	50 mg/kg	phenolic compounds, flavonoids, tannins, alkaloids, saponins, pectin and various organic acids
2.	.Analgesic Activity	Rat	50 mg/kg	flavonoids, tannins, alkaloids and saponins.
3.	Wound Healing	Guinea pig		flavonoids, tannins, phenols. terpenoids
4.	Anti-Asthmatic and Hepato-Protective Activity	Male rat	200-400mg/kg	polyphenols, flavonoids, triterpens.
5.	Anti-Inflammatory Activity	Wistar rat	25–50 mg/kg	flavonoids, phenolic compounds, tannins and fatty acids
6.	Peptic ulcer	Rat	100 mg/kg and 200 mg/kg	procyanidins and epicatechin.

THERAPEUTIC USES

1. The medication Imli (Tamarindus indica) was used in traditional medicine to cure a variety of ailments.
2. It has been thoroughly documented in ethnobotanical literature and has been utilized for a number of purposes.
3. A pessary of seed kernels should be used to treat vaginal atony. After positioning the tract, a paste made from fried seeds was placed to the anus to treat rectal prolapse.
4. Acute or chronic constipation, liver and gall bladder problems, bilious vomiting, alcohol intoxication, fever, pharyngitis, stomatitis, and hemorrhoids are all treated with tamarind. (Anonymous, 2000)[8]
5. It is used to treat splenomegaly, bilious fever, scorpion bite, and scurvy (Nadkarni, 1954[21]; Kirtikar and Basu, 1991).[9]

ADVANTAGES

1. Tamarind is a classic therapeutic ingredient for arthritis because of its antibacterial, anti-inflammatory, and antioxidant qualities.[10]
2. Tamarind is a classic therapeutic ingredient for arthritis because of its antibacterial, anti-inflammatory, and antioxidant qualities.[11]
3. Conjunctivitis is a disease of the eyes that is treated using eye drops made from tamarind pulp. Another eye problem that can be addressed with tamarind seeds is dry eye syndrome.

PHYTOCHEMICAL EVALUATION

Table 1: Qualitative analysis off T. indica leaves and tender shoots in three different solvents.

Sl.No.	Phytocontituents	Leaves extracts			Shoot extracts		
		Methanol	Chloroform	Petroleum ether	Methanol	Chloroform	Petroleum ether
1.	Alkaloids						
	Mayer test	+ +	+	-	+ +	+	-
	wagner test	+ +	-	-	+ +	-	-
2.	Flavonoids						
	Alkaline reagent test	+ + +	+ +	-	+ + +	-	-
3.	Phytosterols						
	Lebermannburchard test	+ +	+	-	+	+	-
	Salkalowski test	+ + +	+	-	+ +	+	-
4.	Amino acids						
	Ninhydrin	-	-	-	+	-	-
5.	Carbohydrates						
	Benedict's test	+ + +	+ +	-	+ +	-	-

+++ (highly present), ++ (moderately present),+ (low present), - (Absent)

CONCLUSION

This review provides general information on ethnopharmacology, therapeutic applications, and bioactive ingredients. Tamarind has a wide range of nutritional qualities with positive benefits on human health and potential uses in the textile and pharmaceutical sectors. It has a number of bioactive substances in its leaves, seeds, bark, fruit pulp, and flowers. The fruit's components give it a distinctive, simultaneously sweet and sour taste that is frequently utilized in cuisine. Determining which use is more crucial—natural medicine or food and drink—is frequently more challenging. This demonstrates the plant's medicinal value. This review is a straightforward attempt to gather the traditional literature on tamarind and, ideally, spark more investigation into the plant's advantages for human health.

Future Scope

Due to its many uses in a variety of industries, such as food and drink, pharmaceuticals, cosmetics, and industrial raw materials, the tamarind (imli) plant has a robust and varied future. With substantial economic potential, the global market for tamarind extract alone is expected to increase from USD 1.145 billion in 2024 to about USD 2 billion by 2034.

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