

Tamarind-a mini review

Abstract

Tamarind, a podded fruit constitutes pulp, seeds, shell and fibres. The various constituents of the pulp include tartaric acid, reducing sugars, pectin, protein, fiber and cellulosic materials. The proximate composition of the tamarind pulp depends on locality. The pulp is widely used for domestic and industrial purposes, and also claims some medical uses. This paper reports brief information of tamarind fruit, composition of tamarind pulp and its uses.

Keywords: tamarind, tartaric acid, protein, cellulosic materials, endocarp

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Introduction

Tamarind is an arboreal fruit of *Tamarindus indica* L. which belongs to family Leguminosae or Caesalpiniaceae. The tree is native to Eastern Africa, including parts of the Madagascar dry deciduous forests.¹ The tree grows wild, though cultivated to limited extent. It is almost found throughout the tropics and subtropics of the world and has become naturalized at many places particularly in India, South East Asia, tropical America, the Pacific Islands and the Caribbean. The major production areas are the Asian countries including India and Thailand. India is the world's largest producer of tamarind with an average production of about 191750 Tonnes in the year 2015-2016.² In India the tree is particularly abundant in states of Madhya Pradesh, Bihar, Andhra Pradesh, Chhattisgarh, Karnataka, Tamilnadu and West Bengal. Tamarind is an important cash crop of India and includes 6th position in terms of export earnings.³

Tamarind Fruit

Tamarind fruits/pods begin to ripen during the months of February-March. The pods are allowed to ripen on the tree until the outer shell is dry and could be easily separated from the pulp without adherence.⁴ The pods are harvested by merely shaking branches of the tree. Tamarind pods contain 3-12seeds, which are irregularly shaped, flattened or rhomboid. Seeds are very hard, shiny, reddish, or purplish brown, enveloped by a tough leathery membrane, the so called endocarp. Outside the endocarp is the light brownish-red, sweetish, acidic edible pulp traversed by tough ligneous fibers. A typical fruit/pod contains about 55% pulp, 34% seeds, and 11% shell and fibres.⁵ Mainly there are two varieties of tamarind found in India, including red and common brown variety. The pulp of the red variety of tamarind is less acidic in taste while the pulp of brown variety has more acidic or sour taste. The pulp of brown variety contains high proportion of free acids as compared to red variety. The anthocyanin pigment, chrysanthemin is responsible for the color of the pulp in case of red variety of tamarind and the brown color of pulp of brown variety is due to leucocyanidin.⁴

Tamarind fruit pulp and its composition

Tamarind tree is a multipurpose tree of which almost every part finds at least some use, either nutritional or medicinal.⁶ The most valuable and commonly used part is the fruit which yields acidic pulp.⁷ The pulp of the fruit contains tartaric acid, reducing sugars, pectin, protein, fiber and cellulosic materials. The percentage of the constituents varies from sample to sample with tartaric acid ranging from 8-18%, reducing sugars 25-45%, pectin 2-3.5% and protein 2-3%.⁸ Besides being a rich source of sugars, tamarind pulp is an excellent source of B-vitamins and exhibit high antioxidant capacity that appear to be associated with a high phenolic content. The fruit pulp is a good source of minerals especially potassium, calcium, phosphorous magnesium and sodium.⁹ Nevertheless, the proximate composition of the tamarind pulp depends on locality. The major volatile constituents of tamarind pulp include furan derivatives (44.4%) and carboxylic acids (38.2%), the components of which are furfural (38.2%), palmitic acid (14.8%), oleic acid (8.1%) and phenyl acetaldehyde (7.5%).¹⁰ According to Lee et al.,¹¹ the most abundant volatile constituent of tamarind is 2-acetyl-furan, coupled with traces of furfural and 5-methylfurfural, which form the total aroma of tamarind pulp. Tartaric acid is the major acid present in tamarind pulp which gives the pulp acidic taste. Tamarind pulp also contains malic, succinic, citric and quinic acid. Nevertheless, the proximate composition of the tamarind pulp depends on locality.¹²

Uses of tamarind pulp

Due to its pleasant acidic taste and rich aroma, the pulp is widely used for domestic and industrial purposes.⁸ The pulp is used for seasoning, to flavor confections, curries and sauces and is used as a substitute for chemical acidulants in the preparation of certain beverages. Tamarind pulp can be processed into number of products including tamarind juice, concentrate, powder, pickles and paste.^{5,7} Tamarind pulp also claims some medical uses and is regarded as a digestive, carminative, laxative, expectorant and blood tonic.¹¹ The pulp has been found to possess hypolipidemic activity.¹⁴ Tamarind intake helps in delaying the progression of fluorosis in humans by enhancing the urinary excretion of fluorine.¹⁵ In traditional practice,

the pulp is applied on inflammations and is also used in a gargle for sore throat. The pulp is said to aid the restoration of sensation in cases of paralysis.¹²

Conclusion

Tamarind is used as a functional food. Tamarind pulp has been used in traditional medicines to treat diseases as well as symptoms. The sticky, edible tamarind pulp is a common ingredient in culinary preparations such as curries, chutneys, sauces, ice cream and sherbet.

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Conflict of interest

This article is original and there is no conflict among authors, and all the authors agreed to publish this review paper in MOJ Food Processing and Technology.

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