

## **Dietary Benefits of Watery Rose Apple (*Syzygium aqueum* (Burm.f.) Alston)**

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### **ABSTRACT**

*Watery Rose Apple is one of the underutilized fruit crops in India. It is grown on domestic level mostly in the backyard or in the kitchen garden. Commercial plantations of Watery Rose Apple are seldom seen in India. Nowadays, due to greater awareness and passion about health and nutrition, people are exploring more and more dietary options. Watery Rose Apple is one such fruit getting attention in Indian fruit markets. This article attempts to explore the dietary usefulness of Watery Rose Apple fruit based on the available research studies.*

**KEY WORDS** :*Watery Rose Apple, Nutritional value, antioxidant, dietary benefits*

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### **INTRODUCTION**

Watery Rose Apple is a tropical fruit crop belonging to the family Myrtaceae and native to Philippines, Indonesia and Malaysia. It occurs naturally from southern India to eastern Malaysia. It is commonly cultivated in India, southeastern Asia, and Indonesia as well as also grown in Hawaii and Trinidad. In India, it is grown in Andhra Pradesh, Kerala, and the Western Ghats. The Watery Rose Apple prefers tropical climate and thrives well in warm and humid areas. It is grown well in heavy and fertile soils and is sensitive to frost.

It is small to medium sized tree growing upto height of 8-10m with branching near the base. Flowers are yellowish white or pinkish in colour. Flowering occurs in February-March and fruits mature during May-June. Fruits are small, bell or pear-shaped with shiny skin, spongy, watery, slightly fragrant, sweet-acidic with 2-6 seeds and white, pinkish or red in colour. There are two types, one white-fruited and the other bearing red or pale-rose coloured fruits. It is propagated by seeds, by budding and air-layering.

The ripe Watery Rose Apple fruit is mainly consumed fresh due to its thirst-relieving character owing to its high water content. Fruit pulp is crispy and watery. The wood is hard and is often used to produce handicrafts. The leaves are eaten raw or dried. The unripe green fruits are eaten raw as well as used to make pickles, jelly, syrup and sauces. In Malaysia and Indonesia, Watery Rose Apple fruits are eaten in fruit salad.

In Indonesia, the fruits are also preserved by pickling. The young leaves are edible. Indonesians use young Watery Rose Apple leaves to wrap snacks of fermented sticky rice. In Malaysian folkloric medicine, a decoction of the astringent bark is a local application for thrush. A Watery Rose Apple salad used to be served at the ceremony after childbirth [6].

## OBJECTIVES

Watery Rose Apple fruit is appearing and gradually establishing in Indian fruit market due to its high antioxidant content and specially the antihyperglycemic properties. The major aim of this study is to explore the research evidences for the assumptions that Watery Rose Apple fruit has high nutritive and medicinal values.

## RESEARCH METHODOLOGY

This is descriptive study based on secondary data. Various research journals, books, websites & various reports related to nutritive and medicinal value of Watery Rose Apple fruit were studied to draw the conclusions.

## RESULTS AND DISCUSSION

### Nutritional value of Watery Rose Apple Fruit

The Watery Rose Apple fruit is rich in fibers, calcium, magnesium, potassium, and Vitamin C though very low in proteins. It has high antioxidant activity and beta-carotene content. It is very low calorie fruit due to high water content and very low fat content. Nutrient composition of Watery Rose Apple fruit per 100g of edible portion was initially reported by Dignan *et al.* [2], Tee *et al.* [20] and volatile constituents by [22].

Recently, Nallakurumban *et al.*, [13] evaluated nutritive value of Watery Rose Apple fruit as follows:

Sr. No.	Constituents	Range
1	Total phenolic contents (mg/100g)	28.80 –30.70
2	Total flavonoids (µg/g)	62.03 to 62.07
3	Antioxidant activity (µg/g)	138.4 -144.50
4	Beta carotene(µg/g)	37.21 -37.28
5	Ascorbic acid /vitamin C contents (mg/100g)	13.06 to 13.08
6	Moisture (g%)	91.70
7	Protein	0.31
8	Fat (g%)	0.29
9	Ash (g%)	1.24
10	Crude fibre (g%)	1.37
11	Acidity (g%)	0.07
12	TSS (bx)	5.4
13	pH	4.14
14	Calcium (mg)	0.64

### Medicinal Values

Fruits, leaves and bark of Watery Rose Apple fruit has many medicinal uses like fever treatment, detoxify the liver, headaches, digestive issues, diabetes, lower cholesterol, skin conditions and prevention against certain types of cancers . A decoction of the astringent bark of Watery Rose Apple is a local application on thrush. In Malaysia the powdered dried leaves are used to treat a cracked tongue and a preparation from the root is used to relieve itching and to reduce swelling [12]. The leaves have been shown to possess antibiotic activity and relieving childbirth pains [19]. Recently, it was shown to have antihyperglycemic properties [11].

### Dietary benefits

Consumers are attracted to Watery Rose Apple due to its low calorie and low fats. Its traditional use for medicinal purpose is well known. A few studies (Kamath *et al.*, 2015; Nallakurumban, *et al.*, 2015) had been conducted to determine the phytochemical and antioxidants properties, moisture, protein, fat, ash, crude fiber, acidity, TSS, pH and calcium content of Watery Rose Apple fruit . Lim & Rabeta [8] determined the antioxidant capacity of Watery Rose Apple (*Syzygium aqueum*) and suggested that it can be used as a source of natural antioxidants. Phenolic content of *Syzygium aqueum* leaf extract [14, 7]

and high percentage of terpenoids and  $\gamma$ -terpinene [22] is confirmed by researchers. They showed a strong correlation of antioxidant activity with the total phenolic content. Osman *et al.*, [15] reported that *Syzygiu maqueum* have high antioxidant activity. Fresh samples had higher phenolic contents and better antioxidant activity than did dried samples. They confirmed *Syzygium aqueum* could be significant sources of natural antioxidant compounds that may have potent beneficial health effects.

Plant extracts as possible skin-whitening agents have been widely studied [17]. *Syzygium aqueum* leaf extracts may be used as a skin treatment ingredient because it is not only an antioxidant but has tyrosinase inhibition activity and may also possess UVB-blocking ability. Findings in the study of Palanisamy *et al.*[16] support the use of *Syzygiu maqueum* extract as a possible cosmetic ingredient with its high TPC, low pro-oxidant capacity, and its ability to scavenge freeradicals, inhibit tyrosinase enzyme and activate lipolysis. Anggrawati & Ramadhania, [1] reported that chemical compounds content most commonly found in the leaves of Watery Rose Apple (*Syzygiu maqueum*) has a pharmacological activity as an antioxidant, anticancer, antidiabetic and antihyperglycemic. This antioxidant activity increased gradually during postharvest ripening [21]. Palanisamy *et al.* [18] reported *Syzygium aqueum* leaf extracts' cosmeceutical properties; antioxidant, antityrosinase, lipolytic and anticellulite activities, as well as not being cytotoxic.

Manaharan *et al.* [10, 11] identified the ability of six bioactive compounds from *Syzygiu maqueum* leaf in managing the conditions associated with diabetic complications and ageing. They found leaf extracts displayed activities comparable and at times higher than the commercial antihyperglycemic drug acarbose. Therefore, suggesting the leaf extract of *Syzygium aqueum* as part of a dietary support for managing hyperglycaemia linked to Type-2 diabetes. Manaharan, *et al.*, 2013 for the first time reported that *Syzygium aqueum* leaf extract and its six bioactive compounds have insulin-like and insulin-sensitising effects on adipocytes suggesting the antidiabetic potential of *Syzygium aqueum* leaf extract and its six bioactive compounds. Palanisamy & Manaharan [17] strongly suggested the antioxidant and antidiabetic potential of *Syzygium aqueum* leaf extract. However, judicious use of *Syzygiu maqueum* leaf extract in diet is necessary due to its pro-oxidant effects [3, 16].

## CONCLUSION

Watery Rose Apple has been traditionally used for its medicinal purpose. Though, a few, the research studies have confirmed its low fat content and low calorie value, high antioxidant activity, high phenolic contents and high vitamin C content. The research studies have confirmed the use of fruits as natural antioxidants. The leaf extract of *Syzygiu maqueum* could be significant sources of natural antioxidant compounds that may have potent beneficial health effects. A newer aspect of using plant extracts as possible skin-whitening agents have also been studied and proved its pharmacological activity as an antioxidant, anticancer, antidiabetic and antihyperglycemic. The use of leaf extracts as a part of a dietary support for managing hyperglycaemia linked to Type-2 diabetes is confirmed with a warning of its judicious use due to its pro-oxidant effects.

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