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## A review on herbal monograph preparation: Rose apple

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**Abstract**

Monograph is a book, pamphlet or document that is complete in itself. It provides scientific information on the safety, efficacy, and quality control/ quality assurance of widely used medicinal plant. With the help of monograph we study the present status and standards of herbal plant like synonym, biological source, family, chemical constituents, medicinal uses, and pharmacological actions. Rose apples, scientifically called as *Syzygium jambos* is native to South East Asian regions belonging to the family Myrtaceae. It's a sensitive fruit which get bruises fluently. The fruits are veritably light in weight because they're hollow. In India, traditionally the fruit has been used as brain and liver tonic. Scientific studies suggest that rose apple has different health benefits similar as anti-inflammatory, analgesic, antifungal, antidermatophytic, anticancer, antimalarial, and antioxidant effects. The seeds are also employed in the treatment of diabetes, diarrhoea and dysentery and an extract of the seeds is set up to have antibacterial activity. The chemical analysis of the extract from the fruit showed the presence of flavonoids, volatile oil and aldehyde derivations as main element. Medicinally the fruit is reported to have anti-cancer and the ethanol extract was effective as a free revolutionary scavenger, reducing total phenol capacity, total flavonoid content, and total antioxidant capacity.

**Keywords:** Monograph, rose apple, pharmacognostic study, medicinal uses, pharmacological actions, etc.

**Introduction**

**Monograph:** A monograph is a book, pamphlet or document that is complete in itself, or A detailed written study of a single specialized subject or an aspect of it <sup>[1]</sup>.

**Monograph of Rose apple**

- **Synonyms:** Wax apple, Plum apple, Rose apple, and Malabar plums, Plum rose
- **Biological source:** *Syzygium jambos*.
- **Family:** Myrtaceae <sup>[2]</sup>

**Geographical distribution:** *Syzygium jambos* is an indigenous plant to Malaysia and Indonesia, southern Asia and Andaman Island <sup>[3]</sup>.



**Fig 1:** Fruits and leaves of rose apple.

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## Organoleptic Characteristics

**Table 1:** Organoleptic characteristics of fruit and leaves of rose apple

Characteristics	Fruits	Leaves
Colour	Bright yellow	Green
Size	2 to 5 cm	10 to 22 cm long; 2.5 to 6.25 cm wide
Shape	Round to oval	Lanceolate

## Taxonomical Classification: [4]

**Table 2:** Taxonomical classification of rose apple

Kingdome	Plantae – Plant
Phylum	Tracheophyta – Vascular plants
Class	Mangoliopsida – Dicotyledonae
Order	Myrtales
Family	Myrtaceae
Genus	<i>Syzygium</i>
Species	<i>S. jambos</i>

## Chemical Constituents

**Table 3:** Chemical constituent of rose apple

Plant Part	Phyto-constituent
Leaf	Phenolic compounds Flavonoids [5, 6, 7]
Bark	Tannin [8]
Bark	Riedelin, Beta-amyrin acetate, Betulinic acid, and Lupeol [9]
Fruit and leaves	Alkaloid, Glycosides, Formic acid, Tartaric acid, Flavonoids, Phenolic content and Steroids [10]
Leaf	Flavonoids, Myricetin and Quercetin 3-O-β-D-oxylopyranosyl (1→2) α L rhamnopyranosides, Ursolic acid and Myricitrin [11, 12, 13]
Leaf	4-hydroxybenzaldehyde, Myricetin-3-O-rhamnoside, europetin-3-O-rhamnoside, Phloretin, Myriganone-G, and Myriganone B [14, 15]

## Chemical Tests to be used for Detection of Metabolites:

### 1. Flavonoids

- Shinoda test
- Alkaline reagent test
- Zinc hydrochloride test

### 2. Tannins

- Goldbeater's skin test:
- Ferric chloride test
- Phenazone test

### 3. Terpenoids

- Libermann-Burchard test
- Salkowski test
- Sulfur powder test

### 4. Proteins

- Warming test
- Test with trichloroacetic acid
- Biuret test [16]

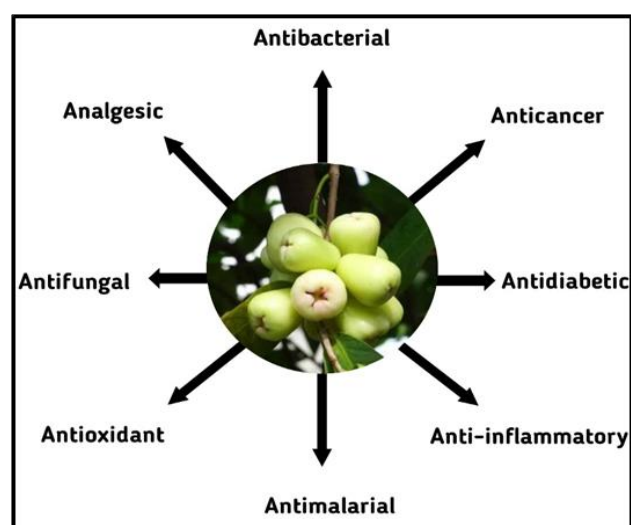
**Medicinal Uses:** The plants are usually grown for fruit and as a garden ornament. The fruit is regarded as tonic for brain and liver and its infusion acts as diuretic. It fights free radicals which might cause heart disease and arthritis [17]. It reduces risk of stroke and act as blood coolant. It boosts good HDL cholesterol and reduces blood glucose level. It is also used as stimulant, digestive, astringent and remedy for tooth

problems. [18] Rose Apple is believed to contain the pain-killer properties in Colombia. The seeds of the fruit are employed to treat diarrhoea, dysentery, diabetics [28].

## Pharmacological Actions

**1. Antibacterial Activity:** Studies suggest that extracts or compounds derived from rose apples exhibit antibacterial effects against various bacterial strains. These effects might be attributed to the presence of bioactive compounds like flavonoids, tannins, and phenolic compounds [20].

**2. Anticancer:** Some investigations have highlighted certain aspects that suggest a potential role in cancer prevention or treatment. Certain review indicates that compounds derived from rose apples may exhibit inhibitory effects on tumor progression or metastasis [21].



**Fig 2:** Pharmacological actions of rose apple

**3. Antidiabetic:** Rose apples (*Syzygium jambos*) have been studied for their potential antidiabetic properties due to their various bioactive compounds. [22]

**4. Antimalarial:** While there's limited direct evidence on the antimalarial properties of rose apples (*Syzygium jambos*), some studies have explored the potential of certain compounds present in rose apples against malaria parasites.

- **Phytochemical Composition:** Rose apples contain various bioactive compounds like flavonoids, tannins, and polyphenols, which have been studied for their potential antiparasitic effects. However, their direct impact on malaria parasites requires further investigation [23].

**5. Antioxidant Effects:** Antioxidants in rose apples may play a role in reducing oxidative stress associated with diabetes [24].

**6. Antifungal:** Rose apples (*Syzygium jambos*) have shown potential antifungal properties attributed to their bioactive compounds. Here are some aspects related to their antifungal potential. Review indicates that rose apple extracts may have inhibitory effects against fungi such as *Candida* species, *Aspergillus* species, and others, potentially inhibiting their growth or viability [25].

**7. Anti-inflammatory:** Rose apples contain flavonoids, phenolic compounds, tannins, and other bioactive substances known for their potential anti-inflammatory effects [26].

**8. Analgesic:** There's limited direct evidence regarding the analgesic properties of rose apples (*Syzygium jambos*). However, some research has suggested potential pain-relieving effects. More extensive studies, including clinical trials, are needed to explore and confirm the analgesic properties of rose apples, identify the active compounds responsible for these effects, and understand their mechanisms of action in addressing pain in humans. Always consult healthcare professionals for appropriate pain management strategies and treatments [27].

## Results

The organoleptic or macroscopical analysis of drug was performed by using open or naked eye for detection of colour, size and shape of leaves and fruit of rose apple (Table No. 1). Chemical constituents were present in the fruit and leaves (Table No. 3) of rose apple have some pharmacological action as shown in the Table No. 5.

**Table 5:** Pharmacological actions of rose apple

Pharmacological Action	Plant Part
Antibacterial	Leaves, Fruits
Anticancer	Fruit, Leaves, Seeds
Antidiabetic	Seeds
Anti-inflammatory	Fruit, Leaves
Antimalarial	Leaves, Bark
Antioxidant	Leaves, Fruit
Antifungal	Leaves, Fruit
Analgesic	Leaves

## Conclusion

The present study of monograph concluded that the monograph available in different pharmacopoeias. It has detail standard information of different type of herbal plant and species or parameters.

The study of Rose Apple concluded that the plant have different synonyms (Wax apple, Plum Apple, Plum Rose.) and Biological Source (*Syzygium jambos*) belongs to Family (Myrtaceae) The Rose Apple contain different types of chemical constituents (Flavonoids, phenolic compounds, tannins, terpenoids, alkaloids, glycosides, steroids, formic acid, tartaric acid) Even though rose apple is having excellent medicinal properties, its cultivation and processing are limited. It's linked as rare species and presently they're risked in their natural habitat. Each section of the plant have its own medicinal value. Considering the implicit bioactivity, this fruit can be studied deeply to find out their unexplored efficacy and to explain their use as traditional drug. Hence, attention must be given for the cultivation and processing of the *Syzygium jambos* fruits and research and development to conduct studies with insulated phytochemicals to perfect understanding of the operation of action responsible for the various beneficent effects like Antibacterial, Anticancer, Antidiabetic, Anti-inflammatory, Antimalarial, Antioxidant, Antifungal, Analgesic.

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