



TIN FRUIT: TYPES AND BENEFIT

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ABSTRACT

This study explores the potential and therapeutic benefits of the tin plant (*Ficus carica* L.), widely recognized in traditional Arabic medicine for its health-promoting properties. Objective: Known as an antioxidant and anticancer agent, tin fruit contains phenols, flavonoids, terpenoids, and alkaloids, which play a role in combating various diseases, including cancer, gastrointestinal disorders, cardiovascular conditions, and inflammation. Method: Utilizing a library research method, the study collects data from books, journals, and scientific articles to analyze the medicinal properties and cultivation of tin plants. Results: Results highlight the rich bioactive compounds present in different varieties, such as Iraqi, Brown Turkey, Green Jordan, and Red Palestine, which are shown to address health issues like diabetes, respiratory ailments, kidney stones, and tumors. The findings also reveal the adaptability of the tin plant to diverse climates, making it a promising candidate for agricultural development in tropical regions like Indonesia. Conclusions: The study concludes that tin fruit cultivation not only supports public health but also offers economic benefits through its use in producing food and herbal medicine. These findings underline the significance of promoting tin cultivation and utilization in modern health and agricultural practices.

Keywords: benefit; tin fruit; types

How to cite (in APA style)

Syamsu, R. F., & Mamile, R. (2025). Tin Fruit: Types and Benefit. *Indonesian Journal of Global Health Research*, 7(3), 927-934. <https://doi.org/10.37287/ijghr.v7i3.6030>.

INTRODUCTION

Tin (*Ficus carica* L.) or (Moraceae) is a very important plant in traditional Arabic medicine due to its therapeutic properties (Alsufyani dkk., 2023). Tin fruit (*Ficus carica* L.) is empirically used as an antioxidant and anticancer. The antioxidant contents found in tin fruit are phenols, benzaldehyde, terpenoids, flavonoids and alkaloids which show effects on various cancer cell proliferation and have antioxidant characteristics (Gultom dkk., 2023). All parts of the tin plant can be utilized in herbal medicine and have proven efficacy in treating various health problems including gastrointestinal disorders, cardiovascular diseases, inflammation, respiratory disorders, ulcerative diseases, and cancer (Rasool dkk., 2023). Tin fruit is widely used in traditional medicine as an antipyretic, tonic, laxative, aphrodisiac, diuretic, astringent and carminative. It is also used to treat inflammation, paralysis, liver and spleen diseases, chest pain, head diseases, leprosy, nosebleeds, and to stimulate hair growth. Tin fruit is also known to have anticancer activity such as gastric cancer, prostate cancer, colon, liver and testicular cancer (Khan, 2017).

Tin fruit contains substances that are very important for the human body because it can reduce bad cholesterol, strengthen the heart and normalize breathing for people with shortness of breath. Tin plants began to be cultivated in Indonesia since the last few decades and are growing quite rapidly (Handriatni & Mariska, 2022). Tin or Fig is a type of edible fruit-bearing plant native to Western Asia. The name "Tin" is taken from Arabic, also known as Ara while in English it is called fig. Tin plants usually grow in tropical areas of the world. *Ficus carica* L. is a widely studied species. This species is native to the Mediterranean region. Tin plants are plants that are able to adapt to various situations and conditions where they

grow and have a fairly long life span, so they are very suitable to be developed in various agricultural fields widely in various parts of the world (Isa dkk., 2020). This research aims to assess the types of tin fruits and their benefits for human health based on the available literature. By understanding the active components contained in tin fruits and their potential in the medical field, it is hoped that this research can contribute to the development of tin plant-based herbal medicine and its utilization in the health field more broadly.

METHOD

This research uses a library research strategy. Library research, according to Mardalis, is research used to collect information and data from various sources such as journals, books, papers, magazines, historical sources, and so on (Mardalis, 1999). According to Nazir, library research is conducted by first collecting data from various sources, then reviewing books, literature, records, and other sources by answering the problems presented in these sources (Nazir, 1988). Thus, library research can be defined as a research process that involves collecting data or information in the form of material sources such as books, journals, articles, historical sources, and so on, to be processed and analyzed. According to Kulthau in Mirzaqon and Purwoko (2017), research steps in literature studies include: choosing a topic, searching for information, determining the focus of the research, collecting data from various sources, presenting existing data, conducting analysis, and compiling research reports.

This research uses a systematic review method. Literature was obtained by reviewing scientific articles or journals downloaded from Google Scholar with a minimum standard of SINTA 4 and Scopus. Articles were filtered based on provisions including articles published in 2019-2025, published articles can be downloaded in full text and have open access, articles with qualitative, quantitative, mixed method designs and literature reviews that discuss Tin Fruit, types of tin fruit, and the benefits of tin fruit. Based on the screening results, the initial search obtained 109 articles. Of the total articles, 41 articles were declared irrelevant or inaccessible in full, leaving 68 articles that could be reviewed. Furthermore, based on eligibility based on the criteria mentioned above, 56 articles were obtained, and of these 56 articles only 35 articles passed the criteria. The 35 articles were then sorted again until 30 articles remained. For this sorting flow can be seen in Figure 1:

RESULT

The types of tin fruit are

Iraqi

Iraqi is a type of sweet early maturing black tin fruit, which can release syrupy water. This plant is one of the Moraceae family which usually grows in countries with tropical and subtropical regions. One part of the tin plant that has not been widely utilized in scientific research is its leaves. Tin leaves are thought to have properties as antioxidants because they contain flavonoids (Qodriah dkk., 2021). Leaves obtained from Khazanah Garden, a Tin plantation in the Cikarang area, West Java (Qodriah dkk., 2021). Iraqi contains secondary metabolite compounds such as flavonoids, saponins, tannins and triterpenoids (Qodriah dkk., 2021). In previous studies, it was found that traditional treatment through Iraqi varieties has been used by the community for the treatment of diabetes, kidney stones, diuretics, reducing shortness of breath, antitumor, and anticancer (Qodriah et al., 2021).



Figure 1. Iraqi Tin Fruit Variety

Brown turkey

Brown Turkey is known to have a blackish brown skin color when ripe. The flesh is soft and has little fiber with a rich sweet taste. The leaves on the Brown Turkey tin are finger-shaped, consisting of 3 to 5 main lobes, the shape of each lobe is not too long and wide, and the edges of the leaves are serrated (Pertiwi & Jakfar, 2024). This plant originated in the Middle East and has spread to the plains of Europe and America. However, currently tin has spread to the Asian plains, and now it has been widely grown and cultivated in modern Middle Eastern countries, Mediterranean regions and even in Indonesia (Pertiwi & Jakfar, 2024). Brown Turkey contains secondary metabolite compounds such as alkaloids, flavonoids, phenolics, terpenoids, steroids and saponins. From the results of isolation carried out on *Ficus carica* L plants, there are several groups of bioactive compounds such as phenolic acid compounds such as 3-O-caffeoylquinic and 5-Ocaffeoylquinic acids, quercetin 3-O-rutinoside and quercetin 3-O-glucoside (Rahmawati dkk., 2019).

In previous studies, traditional treatment was obtained through the type of brown turkey variety and felt to cure diseases by Indonesian people for generations. Tin leaves (*Ficus carica* L.) are used by the community for treatments such as kidney stone removal, diabetes, reducing shortness of breath, diuretics, ulcers, antitumor, anticancer, and antioxidants (Rahmawati dkk., 2019).



Figure 2. Brown Turkey Tin Fruit Variety

Green Jordan

Green Jordan is a type of tin that is popular among fruit lovers. Referred to as the “King of Tin”, Green Jordan is known for its distinctive sweet flavor and few seeds. The fruit has a green skin that remains even when ripe and the flesh is greenish-white in color. Green Yordan tin has thinner leaves, fingered leaf bones with a longer and pointed center, has 3 to 5 main lobes, in the lobes close to the stalk there are an additional 2 small lobes, the grooves between the leaf lobes are more clearly visible, and the edges of the leaves are serrated (Pertiwi & Jakfar, 2024). This plant originated in the Middle East and has spread to the plains of Europe and America. However, at present tin has spread to the Asian plains, and now it has been widely grown and cultivated modernly in Middle Eastern countries, Mediterranean regions and even in Indonesia (Pertiwi & Jakfar, 2024). Green Jordan Fig tin fruit is a tin fruit that is

commonly found in Indonesia (Yusman dkk., 2023). Green Yordan has contents such as sfenol, benzaldehyde, terpenoids, flavonoids and alkaloids that have antioxidants. While tin leaves contain alkaloids, saponins, flavonoids, polyphenols, and ethanol (Hira, 2024). In previous studies, it was found that traditional treatment through the type of Green Jordan variety was used in treating dysentery, menorrhagia, effective in the treatment of enlarged glands, chronic wounds, cervical adenitis, biliary infections and as a gargle, and leaf decoction can be used to wash wounds. In addition, the ethanol content has a role as an antioxidant that can improve blood flow and prevent stroke (Desy Nurdianty dkk., 2023; Pertiwi & Jakfar, 2024).

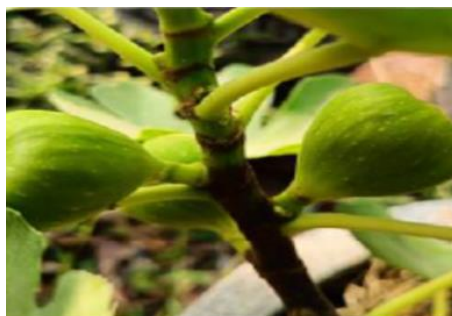


Figure 3. Green Yordan Tin Fruit Variety

Red Palestine

Red Palestine or also known as Red Syrian is a tin variety with a red color. The fruit has a soft texture with a very sweet and slightly sour flavor. The size of the fruit is much larger than the Green Jordan and Brown Turkey tins. The leaves of this type of tin have a finger structure with serrated edges, the size of the leaf palm is wider, the main leaf lobes are 3 to 5, in the lobes close to the stalk there are an additional 2 small lobes that are more closely spaced than Green Jordan (Pertiwi & Jakfar, 2024). This plant originated in the Middle East and has spread to the plains of Europe and America. However, currently tin has spread to the Asian plains, and now it has been widely grown and cultivated in modern Middle Eastern countries, Mediterranean regions and even in Indonesia (Pertiwi & Jakfar, 2024). Red Palestine has contents such as calcium, magnesium and phosphorus, iron and multivitamin content, phytochemical compound content (Pertiwi & Jakfar, 2024). In previous studies, it was found that traditional treatment through the type of Red Palestine variety can be used as a medicine for various diseases such as preventing osteoporosis, can overcome anemia and can help eliminate the dangers of free radicals in the body so as to prevent degenerative diseases such as cancer, diabetes mellitus, stroke and atherosclerosis caused by oxidative stress due to the large amount of oxidants in the body through the oxidation process (Pertiwi & Jakfar, 2024; Syamsu & Rachman, 2023).



Figure 4. Red Palestine Tin Fruit Variety

Puple yordan

Purple Jordan is a type of Mediterranean tin fruit with a large fruit size and can weigh up to 60 to 70 grams. Purple Jordan is reddish yellow in color and tastes sweet. The edges of the leaves are serrated. The leaf margin is shallow. The two lower fingers are short and crossed (Suherman, 2019). This plant originated in the Middle East and has spread to the plains of

Europe and America. However, nowadays tin has spread to the Asian plains, and now it has been widely grown and cultivated modernly in Middle Eastern countries, Mediterranean regions and even in Indonesia. And the Purple Yordan type is very easy to develop in Indonesia (Pertiwi & Jakfar, 2024). This plant variety contains vitamin A, vitamin C, calcium, magnesium, and potassium which are needed by the body. In addition, it contains flavonoids, phenolics, and several bioactive compounds such as arabinose, β -amyrin, β -carotene, glycosides, β -sitosterol and xantol which are antioxidant compounds. And there is a lot of benzaldehyde, polyphenols, antioxidants, and anthocyanins in tin fruit (Hamzah dkk., 2023). In previous studies, it was found that traditional treatment through the type of purple jordan variety can be used as traditional medicine such as anti-inflammatory, anticancer, and antibacterial. In addition, it is useful against cancer cells. Figs also contain substances that can lower cholesterol, strengthen the heart and normalize breathing for people with shortness of breath (Hamzah dkk., 2023).



Figure 5. Purple Yordan Tin Fruit Variety

Tin Plant (*Ficus carica* L.)

Ficus carica L. is a species of flowering plant in the genus *Ficus*, of the moraceae family, known as tin fruit, the name is taken from Arabic (at-tin), also known as “Ara” (figs / fig trees). While in English it is called “fig” (common fig. “common fig tree”), figure (French), feige (German), higo (Spanish), fico (Italian). figu (Australian) (Pourghayoumi dkk., 2012). In history, it is recorded that the tin tree originated in Arabia and has existed since 4000 years BC. The tin plant (*Ficus carica* L.) is a medicinal plant that can thrive in subtropical and tropical areas around the world. It has been spread to Persia, minor Asia, Syria by people throughout the Mediterranean region (Akbar, 2020).



Figure 6. Tin Plant (*Ficus carica* L.)

DISCUSSION

In plant taxonomy, tin plants are in the Kingdom Plantae, Division Magnoliophyta, Class Magnoliopsida, Order Rosales, Family Moraceae, Genus *Ficus*, and Species *Ficus carica* L. From the shape of the leaves This plant has 3 to 5 branches that are similar to fingers, the leaves are green and single with an average length of 12 to 25 cm and a width of 10 to 18 cm. on the surface of the leaves it looks fluffy (Fauzi, 2017). The elements contained in tin fruit are carbohydrates, proteins, and oils. Tin fruit also contains iodine, calcium, phosphorus, iron, magnesium, sulfur (phosphate), chlorine, as well as malic acid and nicotinic acid. Further

research results state that Tin fruit is a fruit that can stimulate the formation of blood hemoglobin, suitable as a cure for anemia. In addition, tin fruit also contains high levels of glucose (Khasanah, 2011). Tin fruit cultivation provides great benefits for the welfare of the community. Tin fruit can be processed into various kinds of healthy foods, and medicines (Zulkarnain dkk., 2023). Morphology or parts of the Tin plant consists of (Hidayah, 2017):

1. Roots

Tin plants have fibrous roots that spread up to three times the diameter of the plant crown and the type is very shallow and supportive. Tin plants are tolerant of soils that lack nutrients and saline soils (Hira, 2024).

2. Buds

Each terminal bud generally has four to five primordial leaves. Primordials develop continuously during tree growth. Shoots elongate and apical meristems develop into buds that produce new leaves and inflorescences (Bako, 2024).

3. Leaves

Tin plants have simple, rough-textured leaves that are 6-18 cm long and 5-15 cm wide. The first lateral leaf blade is straight and angled towards the mother leaf blade at the base of the leaf forming a tri-veined pattern. The leaf bud at the end of the twig is protected by a pair of leaves that fall off easily. When the leaves fall, they leave a white sap that forms a ring on the books of the twig (Fitria, 2024).

4. Stem

Tin plants can reach a height of 3-10 m. Tin plants grow with a lot of branching. Stems and branches are very sensitive to heat and sunlight. Damage can occur in the form of white patches. If injured, the stem produces a white sap. The sap is toxic to humans. Young stems are light green in color turning gray when old. Some varieties have stems that are between green and gray (Sari dkk., 2024).

5. Fruit

Tin fruits appear on lateral buds on leaves. Flowers appear on the lateral bud branches of the leaves. The early growth period is characterized by growth in diameter and weight. At this stage there is almost no difference in sugar accumulation. The second stage is the maturity stage characterized by sugar accumulation without any change in size and weight. The third stage is characterized by an acceleration of fruit diameter size, maturity, as well as water and sugar content (Nurkholifah, 2024).

6. Growing conditions

The tin plant is a subtropical plant that belongs to the genus *Ficus* and the family of *Moraceae*. When grown in cold areas, tin trees are often injured by dew which sheds young branches and can damage the shoots. Tin trees are adaptable to nutrient-poor environments and tolerant of alkaline, saline and dry soils but ideally grow on well-drained soils at least one meter above sea level with a pH between 5-8. Tin varieties that are adaptive to grow in Indonesia are brown turkey, green jordan, purple jordan, panache conadria, and red Israel (Nurkholifah, 2024).

CONCLUSION

Tin fruit (*Ficus carica* L.) is a species of flowering plant in the genus *ficus*, of the *moraceae* family, known as the tin fruit. Tin plants are often found in the Middle East, and are still rarely found in Indonesia, although it has now begun to be cultivated. Tin fruit is one of the plants that has many properties, which are used as antioxidants and anticancer. The antioxidant content found in tin fruit is phenol, benzaldehyde, terpenoids, flavonoids and alkaloids which show effects on various cancer cell proliferation and have antioxidant characteristics. All parts of the tin plant can be utilized in herbal medicine and have proven efficacy in treating various health problems including gastrointestinal disorders, cardiovascular diseases, inflammation, respiratory disorders, ulcerative diseases, and cancer,

as well as many other efficacious treatments from consuming tin fruit.

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