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DISCUSSING *FICUS CARICA* AS A NATURAL AND BLESSED ANTIOXIDANT, A MEDICAL LITERATURE REVIEW STUDY BASED ON A QUR'ANIC VERSE AND A HADITH REPORT

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Abstract

This fruit is not an ordinary fruit. Its scientific name is *Ficus carica.* More are spread in subtropical and tropical areas around the world. In the last Heavenly scripture, one of these particular species of Ficus is given a special oath equivalent to God's special oath to the sun. The Closing Word of Prophethood is believed by the bearer of blessings. This article discusses the strengths and privileges of the Ficus Carica plant content in a health science review through its amazing natural antioxidants. This article conducts a systematic analysis and synthesizes the findings of existing research related to the antioxidant content of the *Ficus Carica.* The result tells, *Ficus Carica* rich in antioxidants and fiber that play a role in helping protect the body's cells from free radicals that can cause inflammation and cell damage and prevent cardiovascular disease, diabetes mellitus, and cancer. Compounds such as triterpenoids and flavonoids in figs are similar to insulin that prevent diabetes mellitus. In Islam, the choice of figs as a medical ingredient is not just a natural factor, but a factor that he is blessed with by Allah *Subhanahu Wa Ta'ala.*

Keywords*: Antioxidant, Qur'an, Diabetes, Cardiovascular, Cancer, Tin*

Background

Fundamentally, God created living beings with various special qualities, one of which is evident in the fig plant that produces figs with diverse benefits. The fig plant belongs to the Moraceae family and holds historical significance as it is mentioned in the holy book, the Quran, particularly in the chapter At-Tin, which describes the uniqueness of this plant. It was revealed to Unique Prophet Muhammad (Peace Be Upon Him). The fig plant is widely distributed in subtropical and tropical regions worldwide, including one unique species, *Ficus carica* L (Ramadhanti, 2023).

System of Prophet Muhammad, in his hadiths, not only focused on discussions about creed, Sharia, and morality but also touched on various disciplines commonly addressed by scholars. In the field of pharmacy (medicine) and health, his hadiths cover many aspects in line with scientific facts confirmed through research (Dalil, 2016). Despite the availability of various modern

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treatment methods in this era, some people still opt for traditional medicine, such as consuming herbal remedies from various plants or fruits, each with its own efficacy.

Technological advancements in the modern era continue to progress, including in the realm of food. Therefore, as consumers, we need food and to be wise in choosing the food we consume, the ingredients, the country that produces it. This era also witnessed many chronic diseases caused by diet and beverage consumption. Awareness of the importance of choosing natural products should come from within, so increased consumption of natural products can help prevent or inhibit the development of degenerative diseases or other illnesses (Makmum & Azizah, 2020).

Figs, as a source of minerals, vitamins, dietary fiber, amino acids, and polyphenols, contain chemical compounds such as polyphenols, flavonoids, and anthocyanins that act as antioxidants, antivirals, antibacterial, anti-inflammatory agents, hemostatic, hypoglycemics, hypercholesteremic, cancer suppressors, and anthelmintic effects. With the properties contained in figs, they can be an alternative treatment for chronic diseases. Figs also contain antioxidants that can bind carcinogenic compounds causing cancer (Ramadhanti, 2023). Therefore, the objective of this research is to explore the role of antioxidants in figs in the context of Islamic literacy and health and identify the relationship between fig consumption and the reduction of disease risk.

Method

The author compiled this paper with his research method being literature review as systematic, explicit and reproducible methods to identify, evaluate and synthesize research results and ideas of researchers and practitioners related to fig antioxidants and looking for free space for research to be implemented. Nature of this study is a descriptive analysis, i.e. from literature and data about blessed and power of fig are given understanding and explanation so that it can be well understood. Research inclusion criteria can be seen in the following Figure 1:

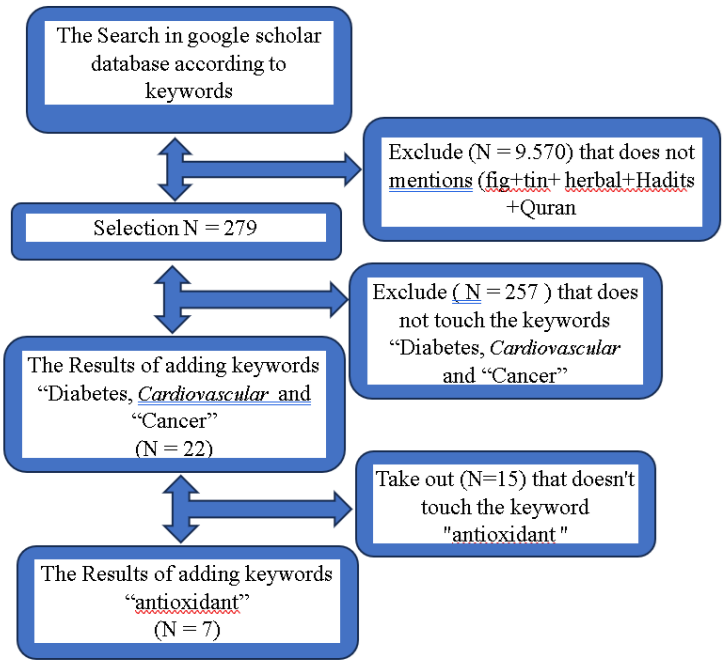

Figure 1. Search flowchart for related reading resource material

The research method used in this case is a qualitative study with inclusion. The criteria are journals that are not very old, published in the last decade and relevant and this study uses a literature review with the type of narrative review in which the researchers. The researcher includes a narrative explanation and a description of the literature relevant to the relevant to the research topic. In this study the topics are the power and value of tin as a unique antioxidant. To find suitable

articles, the authors use the research database method Google Scholar and other electronic journal portals that are compatible with Google Scholar Keywords. The outcome measured in this scientific research was the effect of fig ingredients as a unique alternative natural ingredient and a boon to the role of antioxidants in warding off free radical cells that cause heart attacks, cancer and diabetes.

Results and Discussion

Definition and content of figs for health

The fig, scientifically known as *Ficus carica*, is a fruit-bearing tree belonging to the Moraceae family and widely grown in tropical and subtropical regions worldwide. The fig (*Ficus carica*), locally known as the 'ara tree,' is a member of the fig family, a dioecious plant that has been cultivated by humans for a long time. *Ficus carica* originates from the Middle East and West Asia but has spread to many other parts of the world (Maryam, 2022). The fig (*Ficus carica*) belongs to the Urticales order, with over 1400 species classified into around 40 genera. Some of these species function as females, producing only seeded fruit, while others function as males, producing pollen and supporting the pollination of pollen by bees (Mawa *et al*.,2013).

Kingdom : Plantae
Division : Magnoliophyta
Class : Magnoliopsida
Order : Rosales
Family : Moraceae
Genus : Ficus
Spesies : *Ficus carica* L.

The fig, or *Ficus carica*, has played a significant role in the history of agriculture and human cultivation for thousands of years. Fig cultivation has been a long-standing tradition in various societies, reflecting the importance of this fruit in human food. Some Ficus species, including *Ficus carica*, play a vital role in ecosystems as trees that provide food for various animals, such as birds and insects, supporting natural ecosystems and balanced ecology.

The fig tree can grow to a height of 3-10 meters with a relatively slender trunk and spreading branches, with a trunk diameter of about 17.5 cm. To maintain stability, the fig tree needs support on each branch to prevent it from easily collapsing, and its trunk produces a lot of latex. Its leaves are green, somewhat thick, and usually have serrated edges. The upper surface of the leaves is rough, while the lower surface has fine hairs. Each leaf has 3-7 lobes. The young fruit of this plant is green, and as it ripens, the skin color changes to dark purple, while the inside is red (Sobir & Mega, 2013). This statement provides an overview of the color changes of the fig fruit with ripening, creating a distinctive visual characteristic useful in identifying the fruit's maturity level. This is important for determining the optimal harvesting time and fruit quality.

Figure 2. Young (green) and mature (blue) canes

Most scientific research often focuses on the utilization of fig fruit, while other parts such as leaves are rarely used for research on their chemical composition and biological activities. Traditionally, communities have used fig leaves for treating diabetes, kidney stones, as a diuretic, to alleviate shortness of breath, and for their antitumor and anti-cancer properties. Fig leaves also contain various secondary compounds such as coumarins, triterpenoids, and flavonoids (Badgujar *et al*.,2014). Polyphenolic compounds, particularly flavonoids, have the potential as antioxidants by donating hydrogen from their hydroxyl groups to free radicals.

Research conducted by Khatimah (2018) tested the antioxidant activity using the DPPH method from fig extract, Brown Turkey variety, obtaining IC_{50} values for methanol extract of 78.13 µg/mL, *n*-hexane fraction 492.80 µg/mL, ethyl acetate fraction 16 µg/mL, n-butanol fraction 40 µg/mL, and water fraction 129.18 µg/mL. Antioxidant activity testing from ten varieties of fig leaves with IC_{50} values <50 µg/mL overall showed that fig leaf extracts have very strong antioxidant potential (Mahmoudi *et al*., 2016).

The highest antioxidant activity potential in various parts of the fig plant, in sequence, is in the leaves, fruit flesh, and fruit skin. Fig leaves can inhibit free radicals by up to 70% using the DPPH method and 50% using the nitrite oxidation method, with concentrations of approximately 170 and 500 µg/ml, respectively (Oliveira *et al*., 2016). The antioxidant activity of fig leaf extracts, using a 70% methanol solvent, may be used in the treatment of heart disease, possibly influenced by flavonoid and phenolic compounds.

On the other hand, dried figs extracted using a mixture of solvents such as acetone, dichloromethane, ethyl acetate, and methanol were tested for nutrient content and phytochemical compounds. Dried figs contain various nutrients, such as carbohydrates and minerals like strontium, calcium, magnesium, phosphorus, and iron, while protein and fiber are relatively low. Its phytochemical content includes phenolic compounds, flavonoids, alkaloids, and saponins with antioxidant potential. Additionally, dried figs contain other compounds such as vitamin E, β-amyrin, stigmasterol, campesterol, oleic acid, isoamyl laurate, and tocopherol (Soni *et al*., 2014).

The traditional use of fig leaves for treating various health issues such as diabetes, kidney stones, and their antitumor and anti-cancer properties highlights the importance of exploring the therapeutic potential of this plant's parts, often overlooked. Further research on the chemical composition and biological activities of fig leaves can reveal broader health benefits. Mention of compounds such as coumarins, triterpenoids, and flavonoids in fig leaves provides a strong scientific basis for further research.

Identifying and characterizing these compounds can lead to the development of potential drugs or health supplements. Antioxidant activity testing data from various fig leaf varieties highlights the strong potential of fig leaves as a natural antioxidant source. This information is crucial in developing health products and disease prevention.

Association Between Fig Fruit Composition and Chronic Diseases

1. Cardiovascular Diseases

Cardiovascular diseases are a leading cause of disability and premature death worldwide. One of the main contributors to cardiovascular diseases is atherosclerosis, which develops over several years and usually appears in midlife or in older men and women (Anwar, 2004). Atherosclerosis is a form of arterial blockage caused by various factors, including increased free radicals. This leads to the attachment of mononuclear cells to the arterial wall, triggered by various factors such as oxidized LDL, lipoprotein (a), cytokines like TNF-alpha, IL-1, MCP-1, as well as collagen and elastin damage. This can result in the chronic formation of atherosclerotic plaques in the arteries (Ross, 1999). MCP-1, or Monocyte Chemoattractant Protein-1, is one of the chemokines produced by various cell types after stimulation by inflammatory mediators. MCP-1 acts as a potent chemoattractant and contributes to the inflammatory response in the body, especially in monocytes, macrophages, and natural killer (NK) cells (Gu *et al*., 1998).

Inhibiting MCP-1 activity can reduce inflammation in conditions such as arthritis, while increased MCP-1 expression can strengthen the recruitment of monocytes and lymphocytes in the body. In addition to inflammation, increased free radicals also play a role in the pathogenesis of atherosclerosis. Increased free radicals in endothelial tissue are caused by an imbalance between oxidation and antioxidant activities triggered by hyperlipidemia. This can damage tissues and trigger the production of pro-inflammatory cytokines (Napoli & Lerman, 2004).

The increase in free radicals increases the need for antioxidants, and fruits contain phenolic compounds with antioxidant properties. The mechanism of polyphenols in figs inhibiting the increase in MCP-1 is thought to occur through their antioxidant effects. The antioxidant compounds in fig polyphenols can inhibit lipid peroxidation, reducing free radical production. This reduces damage to the endothelium, reduces MCP-1 stimulation, and prevents atheroma plaque formation, which is the initial step in atherosclerosis development. Although figs contain various types of phenolic compounds such as gallic acid, chlorogenic acid, syringic acid, catechin, epicatechin, and rutin, further research is needed to understand the specific role of each compound in inhibiting MCP-1 (Lukitasari *et al*., 2014).

2. Diabetes Mellitus

Diabetes Mellitus (DM) is a condition characterized by chronic high blood sugar (hyperglycemia) with various metabolic abnormalities due to insulin secretion deficiency or reduced biological effectiveness of insulin or both. The diagnosis of DM is established by measuring fasting blood glucose greater than or equal to 126 mg/dl, blood glucose levels greater than 200 mg/dl at any time, oral glucose tolerance test greater than or equal to 200 mg/dl, or HbA1C greater than or equal to 6.5% (Indonesian Endocrinology Society, 2019).

Although DM cannot be cured, blood sugar levels can be controlled through four pillars of management: education, diet, exercise, and medications. However, current efforts have not been able to reduce the prevalence of DM due to suboptimal treatment, long-term drug therapy, and the difficulty of maintaining patient adherence to treatment. Moreover, in addressing diabetes mellitus, the use of non-pharmacological treatment methods plays a crucial role. The medical team often recommends herbal products as part of managing this disease to avoid complications, such as fig leaf tea or infusion that can regulate blood glucose levels. This approach aligns with guidelines issued by The American Diabetes Association (Dewi, 2013).

One of the compounds found in fig leaves that shares similarities with insulin is Triterpenoid and Flavonoid. These compounds play a crucial role in controlling blood sugar levels in people with DM. Flavonoids also have antioxidant properties that can slow down the absorption of glucose from the digestive tract into the bloodstream, helping regulate the increase in blood glucose levels. In this way, the increase in blood glucose levels can be prevented, which is expected to reduce the production of harmful free radicals (Fadillah, 2014). The flavonoid content in fig leaves has significant benefits in the treatment of diabetes, skin problems, diarrhea, and wounds. This study involved the administration of fig leaf tea for 3 weeks or 21 days, and the results showed that fig leaf extract has effective hypoglycemic activity (Imran & Srivastava, 2011).

This finding was published in the International Research Journal of Pharmacy in 2011 and the ARPN Journal of Science and Technology in 2015. Previous research, published in the International Research of Pharmacy and Research Journal of Medicinal Plant journals in 2011, confirmed that the increase in blood sugar caused by alloxan in experimental animals could be significantly improved or reduced by giving fig leaves and fruit in their food. The effect of reducing blood sugar levels in this case can be attributed to the antioxidant power and fiber content found in fig leaves. The use of fig leaf extract, whether orally or intraperitoneally, on streptozotocin induced diabetic rats resulted in a significant decrease in blood glucose levels. These results indicate that water extract from fig leaves has effective hypoglycemic activity.

Moreover, in a scientific review, there were reports of research testing fig leaf decoction as a supplement, consumed during breakfast. The supplement was given to type 1 diabetes patients who usually received two insulin injections daily. The study recorded effects on lipid metabolism, as well as a significant decrease in postprandial blood glucose levels and insulin requirements.

3. Cancer

Research to discover safe herbal sources of chemopreventive agents continues to this day. One plant with potential as a chemopreventive agent is the fig plant. Its leaves have long been traditionally used as anticancer and antioxidant agents. Phytochemical components found in the fig plant, such as flavonoids, terpenoids, polyphenols, alkaloids, and tannins, are considered crucial compounds that may have a role as anticancer agents. For example, flavonoids have activities such as inhibiting cell proliferation, inducing apoptosis, and acting as antioxidants. Moreover, the presence of ß-sitosterol in fig fruit and leaves has experimentally proven inhibitory effects on the development of various cancer cells (Winanta & Sari, 2023).

The presence of phenolic and flavonoid compounds in fig leaves showing antioxidant activity also has the potential as anticancer agents. There is a positive relationship between the total amount of phenolic and flavonoid compounds in fig leaves and fruit with the IC50 value of antioxidant activity. The antioxidant properties of phenolic compounds can also act as anticancer agents. Cancer cell growth can be inhibited by the presence of antioxidants because they have similar inhibition mechanisms at the cellular level. Antioxidant compounds have the ability to prevent the oxidation of certain molecules that produce free radicals. Antioxidants work by donating hydrogen atoms to radical compounds, converting them into reduced forms that are nonradical. This helps prevent cell mutations, which is the initial step in cancer development. The anticancer properties of flavonoids cover various aspects such as carcinogenesis inactivation, cell cycle inhibition, angiogenesis suppression, cell proliferation inhibition, and apoptosis mechanisms (Burhan *et al*., 2019).

In the United States, approximately 50-60% of cancer patients combine the use of extracts from various plant species (natural remedies) either individually or concurrently with conventional medical therapies such as chemotherapy and/or radiotherapy. Numerous studies have been conducted on *Ficus carica*, confirming the presence of various bioactive compounds, including phenolic compounds, phytosterols, organic acids, anthocyanin components, triterpenoids, coumarins, and volatile compounds such as hydrocarbons and aliphatic alcohols. Phenolic compounds, organic acids, and volatile compounds are generally found in various varieties of F. carica. Phenolic compounds have health benefits for humans as they possess antioxidant properties that have been associated with overall well-being.

Some recent reports have investigated the anticancer activities of F. carica leaf extracts. For instance, a mixture of 6-O-acyl-glucosyl b-sitosterol has demonstrated inhibitory effects in in vitro tests against the proliferation of various cancer cells. In a journal titled 'The Therapeutic Effects of *Ficus carica* Extract as an Antioxidant and Anticancer Agent,' research was conducted on the antioxidant and anticancer properties of *Ficus carica* leaf extract. The tested cancer cell lines in this study included colorectal cancer (CaCo2), laryngeal carcinoma (Hep-2), hepatocellular carcinoma (HepG2), and breast cancer (MCF7). Analysis of variance revealed that all concentrations of the crude extract significantly inhibited the survival of these four types of cancer cells. This study observed a significant decrease in the viability of cancer cells at the average of six different concentrations tested across the four types of cancer cells (Abdel-Rahman *et al*., 2021).

Fig Plants According to the Qur'an and Hadith

In the Quran, there is a chapter that specifically discusses the fig tree. Allah SWT emphasizes the fig tree in this chapter, indicating significant benefits contained within it that can be beneficial to humans. Prophet Muhammad SAW also highlighted the importance of the fig fruit by stating,

"If I were to say that there is a fruit that descended from heaven, I would say that this is it (the fig); indeed, there is no doubt that it is a fruit of paradise" (Hadith narrated by Abu Darba; Suyuti). The uniqueness of the fig fruit is so great that Prophet Muhammad SAW even referred to it as a fruit from paradise.

Surah At-Tin is the 95th chapter in the Quran, consisting of 8 verses. In the first verse of this chapter, Allah swears by the fig tree. Allah grants exceptional honor to the fig tree and reveals profound wisdom from this plant for humanity. Allah elevates the fig tree as an important lesson for people who use their intellect (Agustina, 2017). Allah swears by the fig tree to guide humanity so that they may better understand the wisdom contained within this plant, as stated in Surah At-Tin, verse 4, which reads:

لَقَدْ خَلَقْنَا الْاِنْسَانَ فِيْٓ اَحْسَنِ تَقْوِيْمٍۖ ٤

laqad khalaqnal-insâna fî aḥsani taqwîm

The word "Tiin" comes from the fruit "Tiin," mentioned in the Quran in Surah At-Tin, the first verse. It is accompanied by the word "zaitun" in the second verse, and this expression uses qosam or an oath that states:

وَالتِّيْنِ وَالزَّيْتُوْنِۙ ١

wat-tîni waz-zaitûn

According to the Book of Reasons for Revelation (Asbabun Nuzul), Surah At-Tin was revealed to the Prophet Muhammad before he migrated to Madinah, specifically during his residence in the city of Makkah. This surah is also known as a Makkiyah surah, indicating its revelation in Makkah. The historical accounts state that it was revealed before Surah Al-Buruj and after Surah Al-Quraisy. Various interpretations from scholars exist regarding Surah At-Tin. Some interpret it as the place where figs grow, located in the Mediterranean region, which is suggested to be the birthplace of the Prophet Isa, as mentioned by Ibn Kathir. Ibn Abbas (may Allah be pleased with him) interpreted it as the mountain of figs located in Damascus, while Zaitun is the mountain situated in Baitul Maqdis (Nugraha & Mulyani, 2020).

In Surah At-Tin, Allah takes an oath, implicitly containing deeper messages and secrets that may not be immediately apparent (Nugraha & Mulyani, 2020). Allah's oath regarding the fig and the olive signifies His intention to elevate these names as valuable lessons for those who use their intellect. Commentators on the Qur'an state that the use of oaths in the Qur'an to describe the magnificence of these fruits is due to their beauty, taste, delightful aroma, ease of harvesting and consumption, and significant health benefits. Therefore, the mention of figs in the Qur'an aims to reveal the immense benefits of figs, both as food and traditional medicine.

The benefits of figs are also mentioned in a hadith narrated by Abu Darda (may Allah be pleased with him), stating, "If I were to say that there is a fruit that descended from paradise, it is the fig because the fruits of paradise are without seeds. Consume it, as it can stop hemorrhoids and is beneficial in treating gout" (Narrated by Ibn Qayyim in Zaadul Ma'aad). Hence, it is essential to conduct integrative scientific studies by connecting Quranic evidence with evidence from modern scientific discoveries, especially in the field of health. This is highly relevant to the rich Islamic guidance related to health, such as the recommendation to maintain health, the command to consume halal and wholesome food, and the prohibition of using forbidden substances in treating diseases.

Conclusion

The following conclusions can be drawn from research into related literacies and discussions with members of this research group. Many studies have concluded that figs, rich in natural antioxidants, protect the body from free radicals. Consumption of antioxidant-rich figs is associated with a reduced risk of cardiovascular disease, diabetes and cancer. The antioxidants in figs protect the body's cells, and compounds such as triterpenoids and flavonoids help control blood sugar levels in people with diabetes. As the last holly book with the final prophet, Islam recommends figs for medicinal purposes, reflecting health guidelines and food blessings.

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