Jurnal Eduhealth
Volume 15, Number 04, 2024, DOI 10.54209/eduhealth.v15i04
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

The Effect Of Fig Supplementation On Nutritional Status And Immunity Of The Elderly: A Literature Review

Rachmat Faisal Syamsu[2], Salsabila Tirta Aprilia[1], Mutiara Amalia[1]
[1]Program Studi Profesi Dokter Fakultas Kedokteran Universitas Muslim Indonesia, [2]Departemen Ilmu Kesehatan Masyarakat dan Ilmu Kedokteran Komunitas (IKM-IKK) Fakultas Kedokteran Universitas Muslim Indonesia

Article Info
Keywords:
Figs (*Ficus carica*),
Elderly,
nutritional status,
immunity,
supplements

ABSTRACT
Nutritional and immunity issues in the elderly are important issues that require serious attention, considering that as age increases, physiological changes occur that affect the nutritional status, health, and quality of life of the elderly. Factors such as reduced consumption of nutritious foods, decreased physical activity, and other health problems can increase the risk of malnutrition in the elderly. Figs (*Ficus carica*), which have long been known in traditional medicine, have been shown to have many health benefits, especially in improving the nutritional status and immunity of the elderly. The content of *polyphenols, flavonoids, tannins* , and other antioxidant compounds in figs has the ability to reduce oxidative stress, lower cholesterol levels, and increase endurance. Therefore, fig supplementation can be a good choice to support the health of the elderly, both in maintaining balanced nutrition and improving the body's immune system. Thus, figs are not only useful as a source of additional nutrition, but can also play a role in preventing or reducing various health problems that are often experienced by the elderly. As a medicinal plant, figs offer a more natural and economical alternative in supporting the welfare of the elderly, especially in improving the quality of life of those who are getting older .

Corresponding Author:
Rachmat Faisal Syamsu
Departemen Ilmu Kesehatan Masyarakat dan Ilmu Kedokteran Komunitas (IKM-IKK), Fakultas Kedokteran Universitas Muslim Indonesia
rachmatfaisalsyamsu@umi.ac.id

INTRODUCTION

As the elderly age, physiological changes occur. Changes in the elderly can cause problems, one of which is related to nutrition at this age. Problems that often occur are unhealthy eating patterns such as lack of attention to consuming food and unbalanced nutrient intake so that it will affect the nutritional status of the elderly, decreased physical activity, and an unhealthy lifestyle (Aulannisa, 2024) .

WHO classifies the elderly into 4 criteria, namely middle age *is* 45-59 years, elderly *is* 60-74 years, old age *is* 75-90 years and very old age *is* over 90 years (Stratidaki *et al.* , 2024) According to the Ministry of Health, the elderly age is 60 years and above. The categories are divided into pre-elderly (45-59 years), elderly (60-69 years), and high-risk elderly (elderly >70 years or age >= 60 years with health problems) (Indrianti, Tyas, Yusmiati, Santoso, 2022)

Jurnal Eduhealth
Volume 15, Number 04, 2024, DOI 10.54209/eduhealth.v15i04
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

Malnutrition in the elderly is caused by intake or uptake of nutrients based on body composition and body cell mass, impaired mental and physical function. Referring to the desire to live long by living a healthy lifestyle is a worldwide goal because of the fear of death. In this case, ages over 65 and over 85 have good accuracy in living long in maintaining health (Roberts *et al.* , 2021) .

Nowadays, herbal-based traditional medicine is one of the alternatives that is widely sought after by the public. This is based on the assumption that the side effects of using herbal medicines are smaller than those of chemical drugs. Traditional medicines that have developed in the world include TCM (*Traditional Chinese Medicines*), Ayurveda (*India*), and Islamic Traditional Medicine (*Arabia*). The three principles of traditional medicine all use natural ingredients as medicines used for disease healing therapy based on the principles of each treatment. One of the medicinal plants that has many benefits is figs (Ficus carica). Figs (Ficus carica) are one of the oldest plants known in the world. Figs (Ficus carica) are one of the oldest plants known in the world (Fajar and Mulyani, 2020) .

The California Fig Advisory Board states that figs are fruits that have almost reached the stage of overall perfection. There are several active secondary metabolite compounds found in Figs, especially phenolic compounds which are antioxidants that are very good for improving human health. All parts of the fig plant can be used in herbal medicine and have proven efficacy in treating various health problems including gastrointestinal disorders, cardiovascular disease, inflammation, respiratory disorders, ulcerative disease, and cancer (Fajar and Mulyani, 2020) .

METHOD

The preparation of this article uses the literature review method. The data sources for this study come from both national and international literature obtained through the *Google Scholar, Pubmed,* Elsevier, and *NCBI databases* . In the initial stage of searching for journal articles with the keywords "Fig Fruit Content on Nutritional Status and Elderly Immunity".

RESULTS

Benefits of Figs for Nutritional Status and Immunity

This literature shows the results of a study on the administration of ethanol extract of fig leaves (*Ficus carica Linn*) to the test group at a dose of 200 mg/kg and 400 mg/kg showing weight loss activity, that the higher the concentration, the greater the weight loss of the tested mice. In the ratio of liver and spleen organs, it was found that the higher the dose given, the smaller the ratio of organ weight to mouse body weight. All dose concentrations can reduce fat weight in the retroperitoneal, epididymal, and peritoneal (*Errol et al, 2019*)

In another study, it was shown that polysaccharides found in figs contain antioxidants that can increase cell viability and reduce reactive oxygen species (ROS) levels. Meanwhile, *polysaccharide* (FCPS) effectively improves liver-related insulin resistance by promoting glucose consumption in hepatocytes and activating immune responses through activation of bone marrow-derived dendritic cells (DCs) and upregulation of *interleukin* 6 (IL6) and *interleukin 12* (IL-12) expression (Wang *et al.* , 2023)

Jurnal Eduhealth
Volume 15, Number 04, 2024, DOI 10.54209/eduhealth.v15i04
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

In addition, research by consuming tea leaves has been proven to be able to lower cholesterol levels in the blood . *Flavonoids* and *pectin* are active substances in figs that are thought to be able to influence cholesterol levels. *Flavonoids* can increase the excretion of HDL-C (good cholesterol), while pectin increases the secretion of sterols in cecal metabolism. *(Laksono and Jamil, 2018)*

Figs or figs contain various vitamins. Vitamin C is also known as ascorbic acid, the Vitamin C content of Fig Extract (*Ficus carica L.*) In the human body this compound functions as a catalyst in chemical reactions . Based on the results of the study, it showed that the level of vitamin C in fig flesh with the Iodometric method was obtained 4.13 mg of vitamin C, while for spectrophotometric analysis, the Vitamin C content in figs was 1.244 mg / L and for forest passion fruit, the vitamin C content was 1.904 mg / L. *(Ngginak, Rupidara and Daud, 2019)*

Ficus carica (FC), commonly known as fig, has experimentally proven potential for modulating cell cycle, immunity, inflammation, metabolism, and oxidative stress. Here, we review the potential of FC-derived products (FCDPs) in retarding the progression of cancer, acute/chronic inflammation-related conditions, infections, metabolic disorders, toxicity, neurological and neuromuscular diseases, gastrointestinal disorders, vascular diseases, and skin stress conditions, as well as, in enhancing the normal healthy function of the endocrine, immune, metabolic, and nervous systems. FCDPs have the potential to ameliorate tumor progression through mechanisms such as cell apoptosis, while protecting pancreatic islet cells against apoptosis in diabetes and promoting healthy states through immune-enhancing effects. These remain points for further research in the future. *(Saghazadeh, 2023)*

Discussion

The elements contained in figs are carbohydrates, protein, and oil. Figs also contain iodine, calcium, phosphorus, iron, magnesium, sulfur (phosphate), chlorine, and malic acid and nicotinic acid. Further research results state that figs are fruits that can stimulate the formation of blood hemoglobin, suitable as a medicine for anemia. In addition, figs also contain quite high levels of glucose. The chemical compounds contained in figs are flavonoid and anthocyanin compounds, namely cyanidin glycosides which function as anti-inflammatories, antivirals, antibacterials, and antioxidants *(Nabila Nur Latifa, Lanny Mulqie and Siti Hazar, 2022)*

The effect of flavonoids in lowering cholesterol levels has been widely studied. Oral administration of *qwercetin glycosides* (a type of flavonoid) has been shown to result in decreased levels of fat in plasma and tissues. HDL-C increases accompanied by decreased LDL-C and VLDL-C. Flavonoids are able to increase HDL function through anti-inflammatory and antioxidant mechanisms in cells. In other studies, it was also reported that *flavonoids* are able to reduce lipid metabolism and atherosclerosis and increase HDL levels in some cases. Pectin is able to increase sterol excretion which results in a cholesterol-lowering effect (*Laksono and Jamil, 2018)*

Obesity is a public health problem because it can cause the risk of degenerative diseases such as type 2 diabetes mellitus, high blood pressure, heart disease, cancer, and atherosclerosis. An unhealthy lifestyle in the elderly such as lack of physical activity by exercising, a diet high in carbohydrates and fats, can cause fat deposits in the body, especially

Jurnal Eduhealth
Volume 15, Number 04, 2024, DOI 10.54209/eduhealth.v15i04
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

in the abdomen. In addition, it is not uncommon to find elderly people with nutritional status (BMI) who are overweight or obese. The content of fig leaves *(Ficus carica)* is flavonoids, alkaloids, tannins and steroids, fig leaf extract has antioxidant activity. The anti-obesity activity of ethanol extract of fig leaves *(Ficus carica)* can be used as an anti-obesity especially in the elderly *(Noordam, Tamat and Abdillah, 2019)*

Today's society, especially in Indonesia, has widely used plants as alternative medicine. This is because the use of traditional medicine is more economical and has fewer side effects than chemical drugs. (21)

The stems, leaves and fruits of *Ficus carica* have long been used as traditional medicine for gastrointestinal disorders, respiration, diabetes, skin diseases, dysentery and hemorrhoid wounds and many other diseases. *Ficus carica leaves* (tins), have active substances alkali, fatty acids, alcohol, *Phytosterol* and triterpenoids that are beneficial for the human body. Fatty acid substances function as antioxidants. *Phytosterol* is able to actively inhibit the absorption of cholesterol in the digestive tract *(Laksono and Jamil, 2018)*

Figs have a higher concentration of polyphenols compared to apricots, grapes, and *plums,* which is 1,090-1,110 mg/100 grams of fresh fruit. Polyphenols themselves are classified as secondary antioxidants that act as *radical scavengers* . Based on the test of antioxidant activity of DPPH radical scavengers, the results showed that the fig extract given to experimental animals had an IC50 value of 4.41 ppm and was proven to have antioxidant activity. The polyphenol content in figs can suppress oxidative stress and reduce lipid damage due to hypoxia. Other studies have shown that figs have the main antioxidant ability when compared to onions, pumpkins, and cucumbers. *(Mashile, Tshisikhawe and Masevhe, 2019)*

Figs have been shown to increase post-treatment immunity against Flavobacterium columnare bacterial infections. The immune-boosting effects of figs are accompanied by increased serum lysozyme activity, bactericidal activity, complement C3, globulin, and pro-inflammatory cytokine gene expression, such as IL-1 β and TNF- α . *(Saghazadeh, 2023b)*

Fig or *Ficus carica* is a fruit tree from the Moraceae family and grows widely in tropical and subtropical areas of the world. Fig leaf extract *(Ficus carica)* contains active substances such as flavonoids, tannins, and terpenoids which have been known to have antibacterial and antiviral potential *(Fajar and Mulyani, 2020)* .

Figs that can increase immunity in the body because they have various contents in them, including; as a cancer preventative, as an anti-inflammatory and antitumor, as an alternative therapy for liver disease, stabilizing the heartbeat and strengthening bones. Morin flavonoids found in figs *(Ficus carica)* and other plants have been shown to inhibit the development of colon cancer in the short and long term *(Makmun and Azizah, 2020) .*

In recent years, plant-derived natural products have gained significant attention due to their potential therapeutic properties against various types of cancer, including cervical cancer. Many natural compounds have been identified as potential candidates for cancer therapy due to their ability to induce apoptosis, inhibit cell proliferation, and modulate cellular signaling pathways. Among these, fig latex derived from the *Ficus carica tree* has shown promising anticancer properties. Recent studies have highlighted the cytotoxic effects of fig latex against various cancer cell lines, including cervical, gastric, and colorectal cancers.

Jurnal Eduhealth
Volume 15, Number 04, 2024, DOI 10.54209/eduhealth.v15i04
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

Notably, our previous publication demonstrated the effectiveness of fig latex in suppressing cervical cancer cell growth and inducing apoptosis, thus strengthening its potential as a valuable candidate for cancer therapy *(Cakir et al., 2023) .*

Figs *(Ficus carica)* are members of the monoecious and deciduous tree family that have been cultivated by humans for a long time. *Ficus carica* is native to the Middle East and West Asia, but has spread to many other regions of the world. Products from *Ficus carica* are widely used as a source of food and medicine to treat various diseases. *(Makmun and Azizah, 2020)* .

CONCLUSION

Figs (Ficus carica), which have long been known in traditional medicine, have been proven to have many health benefits, especially in improving the nutritional status and immunity of the elderly. The content of polyphenols, flavonoids, tannins, and other antioxidant compounds in figs have the ability to reduce oxidative stress, lower cholesterol levels, and increase endurance. Therefore, fig supplementation can be a good choice to support the health of the elderly, both in maintaining balanced nutrition and improving the body's immune system.

REFERENCE

Aulannisa, N. A. (2024) 'Hubungan Pola Makan , Status Gizi Dengan Kualitas Hidup Lansia', 4(5), pp. 1132–1137. doi: 10.59141/comserva.v4i5.2171.

Cakir, M. O. *et al.* (2023) 'Ficus carica Latex Modulates Immunity-Linked Gene Expression in Human Papillomavirus Positive Cervical Cancer Cell Lines: Evidence from RNA Seq Transcriptome Analysis', *International Journal of Molecular Sciences*, 24(17). doi: 10.3390/ijms241713646.

ERROL RAKHMAD NOORDAM*, SWASONO R TAMAT, S. A. (2019) 'View of Anti-obesity Activity Tin Leaf Extract (Ficus carica Linn) on the Rats given High Fat Diets.pdf', pp. 81–86.

Fajar, W. and Mulyani, T. (2020) 'REVIEW ARTIKEL : ETNOFARMAKOLOGI TANAMAN TIN (Ficus Carica L.) (KAJIAN TAFSIR ILMI TENTANG BUAH TIN DALAM AL-QUR'AN)', *Jurnal Farmagazine*, 7(1), p. 58. doi: 10.47653/farm.v7i1.156.

Indrianti,Tyas,Yusmiati,Santoso, B. (2022) 'Pembangunan Berkelanjutan', *ILPPM UPN VETERAN YOYAKARTA 951–952.*, pp. 1–19.

Laksono, B. B. and Jamil, M. (2018) 'PENGARUH PEMBERIAN TEH DAUN TIN (Ficus Carica) DOSIS DUA KALI SEHARI TERHADAP KADAR TOTAL KOLESTEROL PADA MAHASISWA OBESITAS DI POLTEKKES RS dr. SOEPRAOEN MALANG', *Jurnal Kesehatan Mesencephalon*, 4(2). doi: 10.36053/mesencephalon.v4i2.88.

Makmun, A. and Azizah, F. N. (2020) 'Beberapa Khasiat Buah Tin (Ficus Carica) Dari Antikonvulsan, Antialergi, Antiinflamasi, Antihiperglikemi, Antikanker Hingga Terapi Hati', *Unram Medical Journal*, 9(3), pp. 184–201. doi: 10.29303/jk.v9i3.4365.

Mashile, S. P., Tshisikhawe, M. P. and Masevhe, N. A. (2019) 'Indigenous fruit plants species of the Mapulana of Ehlanzeni district in Mpumalanga province, South Africa', *South African Journal of Botany*, 122, pp. 180–183. doi: 10.1016/j.sajb.2018.09.031.

Nabila Nur Latifa, Lanny Mulqie and Siti Hazar (2022) 'Penetapan Kadar Sari Larut Air dan Kadar Sari Larut Etanol Simplisia Buah Tin (Ficus carica L.)', *Bandung Conference Series: Pharmacy*, 2(2). doi: 10.29313/bcsp.v2i2.4575.

Ngginak, J., Rupidara, A. and Daud, Y. (2019) 'Analisis Kandungan Vitamin C dari Ekstrak Buah Ara (Ficus carica L) dan Markisa Hutan (Passiflora foetida L)', *Jurnal Sains dan Edukasi Sains*, 2(2), pp. 54–59. doi: 10.24246/juses.v2i2p54-59.

Noordam, E. R., Tamat, S. R. and Abdillah, S. (2019) 'Aktivitas Anti Obesitas Ekstrak daun Tin (Ficus carica Linn) pada Tikus yang Diberi Diet Lemak Tinggi', *Jurnal Ilmu Kefarmasian Indonesia*, 17(1), pp. 81–86.

Roberts, S. B. *et al.* (2021) 'Healthy Aging - Nutrition Matters: Start Early and Screen Often', *Advances in Nutrition*, 12(4), pp. 1438–1448. doi: 10.1093/advances/nmab032.

Saghazadeh, A. (2023a) 'Exploring the pharmacological versatility of ficus carica: Modulating classical immunometabolism and beyond', *Pharmacological Research*, 198(November 2023), p. 107010. doi: 10.1016/j.phrs.2023.107010.

Saghazadeh, A. (2023b) 'Exploring the pharmacological versatility of ficus carica: Modulating classical immunometabolism and beyond', *Pharmacological Research*, 198(October), p. 107010. doi: 10.1016/j.phrs.2023.107010.

Stratidaki, E. *et al.* (2024) 'A Study of Factors Contributing to the Nutritional Status of Elderly People Receiving Home Care', *Nutrients* , 16(18), pp. 1–13. doi: 10.3390/nu16183135.

Wang, W. *et al.* (2023) 'Ficus carica polysaccharide extraction via ultrasound-assisted technique: Structure characterization, antioxidant, hypoglycemic and immunomodulatory activities', *Ultrasonics Sonochemistry*, 101(November), p. 106680. doi: 10.1016/j.ultsonch.2023.106680.