

OLIVE LEAVES

Olea europaea

Family

Oleaceae, also known as the olive family or sometimes the lilac family.

Parts Used

Leaf

Description

A small evergreen tree, typical in tropical and warm temperate regions, the olive is native to the Middle East and to the coastal areas of the eastern Mediterranean Basin, western Asia and northern Africa. It is short and thick but can grow up to 10 metres in height. It is easily recognised by its irregular, often gnarled trunks, opposite pairs of oblong, dark green leaves that are silvery below and small creamy white flowers. It is well known for its distinctive fruit known as a drupe, that is, a fleshy

fruit with a single stone (like a peach or an apricot), and occupies a prominent position in Mediterranean commerce as the source of olive oil. Incidentally, since olives are drupes or fruits, olive oil is a 'fruit juice'. The epidemiological connection between the Mediterranean diet and lower incidence of cardiovascular disease is well established and often linked to high intake of olive oil. Although olives are now cultivated in several parts of the world, the Mediterranean region still functions as the major contributor. Currently, 98% of olive products originate from the Mediterranean basin playing a significant role in the region's economy and making olives synonymous with this region. Olive trees are very long lived and can be productive for several hundred years if well managed, greatly adding value to the land. The value of the olive tree, however, extends past economics to its nutritional and medicinal properties.^{1,2,3,4,5}



Sustainability

Olive groves are celebrated for their sustainability and olive leaf is a sustainable option in herbal medicine as it is considered a waste product from the olive industry. Olive orchards are rich in insect life and provide important feeding places for resident and migratory birds. Olives not only cope with, but actually do better in poor soil. Their expansive, shallow roots help bind the soil on slopes.⁶

Traditional and empirical use

I like them all [trees], but especially the olive. For what it symbolises, first of all - peace with its leaves and joy with its golden oil. True, the crown of olive was originally worn by Roman conquerors at ovation; the peace it proclaimed was the peace of victory, the peace which is too often only the tranquillity of exhaustion or complete annihilation. Rome and its customs have passed, and we remember of the olive only the fact that it stood for peace, not the circumstances in which it did so...The 'olive of peace' [olive of peace] is, then, a symbol, and I love it for what it stands for. I love it also for what it is, in itself, aesthetically; for what it is in relation to the Mediterranean landscape in which it beautifully plays its part." Aldous Huxley, *The Olive Tree and Other Essays*, 1936.⁷

The olive tree is one of the oldest cultivated trees on earth. The cultivation of olive started in ancient times and it dates back more than 7000 years. According to archaeological records, olives were commercially cultivated by the Minoans in Crete as far back as 3000 BC. It is the first botanical noted in the Bible, where it is described in Ezekiel 47:12, "The fruit thereof shall be for meat, and the leaf thereof for medicine." The dove, released from the Ark by Noah in the book of Genesis, returned with an olive branch, thus permanently linking both the olive branch and the dove with peace. Ancient Egyptians used it in the process of mummifying pharaohs and other cultures, including the Greeks, employed it as a folk remedy for fever. The olive branch has transcended its biblical origins to become an international symbol of peace and reconciliation.⁸

Throughout history there are multiple references for use of olive leaves in the treatment of fevers including intermittent fever, typhoid fever and

bilious fever. The leaves were also traditionally used for the treatment of malaria. The first mention of olive leaves' medicinal use in modern times was in 1843 when Daniel Hanbury of England reported a bitter substance from olive leaf tea was the agent responsible for healing malaria and associated fevers. These findings were reported in 1854 in the *Pharmaceutical Journal*, along with dosing instructions and a recipe for making the curative tea. In 1898, a strong decoction of olive leaves was cited in *King's American Dispensatory* as helpful in regulating body temperature.^{9,10}

In the last century, extracts of olive leaves have been studied in both animals and humans and have been found to exhibit strong antimicrobial properties against viruses, bacteria, yeast and parasites. Olive leaves also have numerous cardiovascular benefits, some hypoglycaemic activity, and possesses antioxidant activity and can be used for heart health to combat high blood pressure, type 2 diabetes and atherosclerosis. Research suggests the antioxidant action could help support the immune system and general wellbeing by providing protection and repair from oxidative damage to the liver, gastrointestinal tract and nervous system.^{11,12,13}

Olive leaves are neuroprotective and can help mitigate the cognitive impairment commonly experienced in Lyme disease. One of the ways they do that is by improving the permeability of the blood brain barrier and reducing brain oedema. Olive leaves are also one of the stronger and more effective antimicrobials for Lyme disease.¹⁴

Constituents

More than 200 chemical compounds are found in the olive plant including sterols, carotenes, triterpene alcohols and phenolic compounds. Secoiridoids such as oleuropein, ligstroside and oleoside; flavonoids such as apigenin, rutin and diosmin, kaempferol, luteolin glycosides and chrysoeriol; and phenolic compounds such as caffeic acid, tyrosol and hydroxytyrosol; mannitol; triterpenes including oleanolic acid and uvaol, sterols. These constituents afford the tree, and its fruits and leaves, resistance to damage from pathogens and insects.¹⁵

Actions

Antimicrobial, antifungal, antiviral, antioxidant, hypotensive, cardiotonic, diuretic, hypoglycaemic, antipyretic, antispasmodic, astringent, neuroprotective

Pharmacological activity

A large number of studies in the literature report that olive leaves have positive effects, through many mechanisms, on the parameters related to diabetes and cardiovascular diseases. According to the literature the studies on these subjects are generally on cell culture and animal trials. Therefore, more randomised controlled human clinical trials are needed given that preclinical trials cannot be extrapolated to human use.¹⁶ In preclinical studies they have displayed antiviral properties and have been shown to inhibit acute infection. They can also be used to relieve symptoms of coughs, colds and flu, sore throats, fever, upper respiratory tract infections and oral herpes. While there is some laboratory evidence for these effects clinical evidence in humans is inconclusive.

Hypotensive Activity

Olive leaves have been researched for their effects in treating hypertension through human studies. They are a safe and effective choice to address this condition, which is employed by herbalists alongside appropriate lifestyle and dietary interventions. Olive leaves are believed to achieve this hypotensive effect by a number of actions as they modify physiological activities in the cardiovascular system. These effects include inhibiting angiotensin-converting enzyme (ACE, a naturally occurring substance that narrows blood vessels that plays an important role in hypertension). They also act by blocking calcium channels as well as eliciting vasodilatory and antioxidant activities. The diuretic actions of olive leaves also contribute to their hypotensive effects.¹⁷

Hypertension has been identified as the world's third leading cause of death. The hypotensive and cholesterol-lowering actions of olive leaves are well-documented. They were first reported in 1951 and confirmed by Italian researchers a decade later. These results spurred numerous *in vitro* and *in vivo* studies on its hypotensive properties. A 2022 systematic review and meta-analysis found

that consumption of olive leaves had a significant effect on systolic blood pressure and diastolic blood pressure in five studies with a sample size of 145 people. Consumption of olive leaves also decreased cholesterol levels, low-density lipoprotein levels and triglycerides levels.¹⁸

A further systematic review, carried out in 2021, of five trials involving 325 patients aged 18 to 80 years suggested concurrent results that demonstrated positive effects of olive leaves in reducing systolic blood pressure. This review also verifies lowering efforts on low density lipoprotein and pro-inflammatory biomarkers.¹⁹

In a recent double-blind, randomised, parallel and active-controlled clinical study olive leaves, at the dose of 500mg twice daily, were similarly effective in lowering systolic and diastolic blood pressures in subjects with stage 1 hypertension as Captopril (an angiotensin-converting enzyme inhibitor used for the treatment of hypertension), given at its effective dose of 12.5-25mg twice daily. There was a run-in period of four weeks continued subsequently by an eight week treatment period. A significant reduction of triglyceride levels was observed in the olive group but not in Captopril group.²⁰

In an earlier human clinical trial olive leaves reduced blood pressure in 40 borderline hypertensive pairs of identical twins. Twins from each pair were assigned to control or two treatment groups receiving either 500 or 1000mg olive leaves daily for eight weeks. Body weight, heart rate, blood pressure, glucose and lipids were measured at two week intervals. Blood pressure values decreased within pairs, with an average difference in systolic pressure up to 6mmHg between the 500mg olive leaves extract group and control group and up to 13mmHg difference between 500mg and 1000mg groups after six weeks. Maximum differences in diastolic blood pressure in the same two groups were 5mmHg in each. At the end of the study, mean blood pressure remained unchanged for those in the control and 500mg groups, while those in the 1000mg group reported a significant decrease in mean systolic blood pressure. All subjects reported decreases in cholesterol.²¹

Antimicrobial Activity

The literature highlights the strong antibacterial activity demonstrated by olive leaves in numerous studies. Notably, *Staphylococcus aureus*,

Streptococcus mutans and *Escherichia coli* have demonstrated the greatest sensitivity to the extract. Olive leaves have also been confirmed to have a strong antiviral impact against various viruses in preclinical studies including Epstein Barr Virus, human papillomavirus, hepatitis C virus, hepatitis B virus, herpes simplex virus, respiratory syncytial virus and influenza virus type A. The mechanism by which olive leaves fight viruses is not yet fully understood. However, it may increase the immune response against viruses by stimulating phagocytosis. Other studies have revealed that olive leaves could impact the human immunodeficiency virus (HIV) by hindering the transmission of HIV into the target cells. The published data generally shows consistent and satisfactory results, but knowledge remains limited, particularly in clinical trials.^{22,23}

Most recently, in a 2023 study, olive leaves improved the clinical status of COVID-19 patients and decreased the length of hospitalisation. The randomised, triple-blinded trial was conducted in Iran on 141 patients hospitalised with COVID-19 confirmed with a PCR test. Eligible patients were allocated to receive either 250mg of olive leaves capsules every 12 hours for five days (intervention A), 500mg every 12 hours for five days (intervention B) and the control group received placebo every 12 hours for five days. Based on the results, olive leaves effectively reduced respiratory rate, pulse rate and body temperature and increased blood oxygen saturation of COVID-19 patients. It also decreased laboratory markers of inflammation in COVID-19 patients. The findings also showed that olive leaves can shorten the duration of hospitalisation and lead to the early discharge of the patient. There was no difference between the two doses of olive leaves (250mg and 500mg) in terms of efficacy. The researchers said the mechanism by which olive leaves fights viruses is not yet fully understood however it may interfere with the attachment of the virus to the target cell and its subsequent engulfment by immune cells. The researchers suggested that further studies, with a larger sample size, be conducted to discover the efficacy of olive leaves in the treatment of COVID-19 patients.²⁴

A 2019 randomised controlled trial in New Zealand looked at the effect of olive leaves on upper respiratory illness in high school athletes. Thirty-two elite high school athletes (from hockey,

football and netball) took 20g olive leaves tablets or placebo daily for two months. There was no significant difference in the incidence of upper respiratory illness however there was a significant 28% reduction in sick days in those athletes who took olive leaves compared to placebo. The average duration of each upper respiratory illness episode was 9.7 days in the olive leaves group and 12.3 days in the placebo group. According to the study authors the athlete's dietary intake (especially carbohydrate) was sub-optimal which may have diminished any further effects of olive leaves supplementation.²⁵

Hypoglycaemic Activity

Olive leaves have a long history of use as an antidiabetic agent. In preclinical trials olive leaves have been shown to increase pancreatic beta-cell activity, insulin-like growth factor binding protein-1, insulin sensitivity and glucagon-like peptide-1 concentration, and to decrease intestinal glucose uptake, cortisol levels and psychological stress. These actions play a key role in regulating blood glucose levels. While these effects are promising, further work is needed to establish the effectiveness of olive leaves in humans with diabetes.²⁶

Olive leaves may aid in diabetes control, according to a recent human study, adding validity to the traditional use. In this study 79 adults with type 2 diabetes took olive leaves or placebo once daily for 14 weeks. Participants given olive leaves showed a significantly greater decrease in blood sugar levels compared to members of the control group. While this is a small study sample it replicates earlier animal studies and shows promise for olive leaves in the treatment of type 2 diabetes.²⁷

Antioxidant and Anti-inflammatory Activity

Olive leaves, and specific compounds within them, have demonstrated efficacy in a range of in vitro and in vivo cancer models. The source of cytotoxicity is yet to be fully defined however compounds, such as oleuropein and verbascoside, have independent cytotoxic effects on animal models of cancer. While these initial results from animal models are promising they need to be translated to a clinical setting.²⁸

Indications

- Hypertension, atherosclerosis, angina pectoris
- Immune system support and general wellbeing, influenza and other viral infections, symptoms of coughs, colds and flu, sore throats, fever, upper respiratory tract infections, oral herpes and herpes zoster (shingles), Lyme disease
- Dyspepsia, gastroesophageal reflux disease (GERD)
- Type 2 diabetes, metabolic syndrome
- Osteoarthritis, rheumatoid arthritis, osteoporosis, gout
- Fluid retention, urinary tract infections
- Cognitive health problems including attention deficit hyperactivity disorder and Alzheimer's disease
- Oxidative stress

Energetics

Bitter, astringent, slightly cooling.²⁹

Use in Pregnancy

No adverse effects expected.³⁰

Contraindications and Cautions

None known.³¹

Drug Interactions

While it may not be clinically significant, monitor with anticoagulant/antiplatelet drugs as concomitant use may theoretically increase the risk of bleeding and bruising. Monitor for hypoglycaemia when there is concomitant use with antidiabetic drugs as additive effects are theoretically possible. Monitor with antihypertensive drugs as additive effects are theoretically possible. The interaction may be beneficial, but patients should be monitored for hypotension.³²

Administration and Dosage

Liquid Extract:	1:1
Alcohol:	45%
Weekly Dosage: ²⁴	10 to 20mL ³³

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