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Review Article

Therapeutic potential of *Zaitoon* (*Olea europaea* Linn.) in Unani System of Medicine: An evidence-based approach

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ABSTRACT

Zaitoon (*Olea europaea* L.), commonly known as olive, holds significant therapeutic and nutritional value and has been revered in traditional systems of medicine, including Unani, for centuries. Rich in monounsaturated fatty acids, polyphenols, flavonoids, and tocopherols, *Zaitoon* exhibits a wide array of pharmacological properties such as antioxidant, anti-inflammatory, cardioprotective, anticancer, hepatoprotective, antidiabetic, and neuroprotective effects. The oil extracted from its fruit, especially extra virgin olive oil, has been extensively studied for its role in preventing metabolic disorders and enhancing overall health. Traditional Unani texts regard *Zaitoon* as a potent *Muqawwi-e-A'za Ra'eesa* (strengthener of vital organs), particularly the heart and brain. Modern scientific research further supports these claims, highlighting its potential in reducing the risk of cardiovascular diseases, regulating lipid profiles, and improving cognitive functions. This review aims to compile and critically analyse the phytochemical composition, pharmacological activities, and traditional uses of *Zaitoon*, bridging classical knowledge with contemporary scientific findings to explore its potential in evidence-based integrative medicine.

INTRODUCTION

Zaitoon (*Olea europaea* L.), commonly known as olive, is a small evergreen tree belonging to the family Oleaceae. It is native to the Mediterranean basin but is now cultivated extensively across various parts of the world, including Southern Europe, North Africa, the Middle East, and parts of Asia. The olive tree has been valued for its fruit and oil for thousands of years and holds a place of immense significance in traditional medicine, particularly the Unani and Ayurvedic systems, as well as in religious texts like the Qur'an, where it is described as a "blessed tree" (Surah An-Nur, 24:35) (Anonymous; YNM)

The olive is one of the plants most often cited in literature. The olive tree and olive oil are mentioned seven times in the Quran, and the olive is praised as a precious fruit. Olive tree and olive oil health benefits have been promoted in Prophetic medicine. The Prophet Mohammed (PBUH) is reported to have said: "Take oil of olive and massage with it - it is a blessed tree" (Sunan al-Darimi, 69:103).

Olive trees are very hardy, drought-, disease- and fire resistant, and can live for a very long time. Its root system is very robust and capable of regenerating the tree even if the above-ground structure is destroyed. Unani scholars such as *Ibn Sina*, *Zakariya Razi*, and *Kabiruddin* have classified *Zaitoon* as *Muqawwi-e-*

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Qalb (cardiotonic), *Muqawwi-e-A'sab* (nervine tonic), *Mufatteh-e-Sudad* (deobstruent), *Mulayyīn* (mild laxative), and *Muhallil-e-Waram* (anti-inflammatory), indicating its use in treating conditions like hypertension, joint inflammation, constipation, liver dysfunction, and skin disorders. (Kabiruddin, 2004; Sina, 2007)

Modern scientific studies have validated many of these traditional claims. *Zaitoon* is now recognized for its rich phytochemical profile, including oleuropein, hydroxytyrosol, tyrosol, flavonoids, squalene, and monounsaturated fatty acids (especially oleic acid). These constituents contribute to a wide range of pharmacological effects, including antioxidant, anti-inflammatory, cardioprotective, neuroprotective, hepatoprotective, and anticancer activities (Hashmi, 2015; Tripoli, 2005)

RATIONALE

Despite the extensive documentation of *Zaitoon's* therapeutic potential across both traditional and modern medical systems, much of the available information remains scattered across disciplines and sources. There is a clear need to consolidate classical Unani insights with contemporary scientific evidence to provide a comprehensive understanding of this versatile plant. Moreover, with the global resurgence of interest in plant-based and integrative medicine, *Zaitoon* serves as a prime example of a medicinal plant that bridges ancient wisdom with modern pharmacological relevance.

Therefore, this paper aims to explore *Zaitoon's* botanical characteristics, traditional uses in Unani medicine, phytochemistry, pharmacological activities, and clinical relevance, while highlighting areas for future research and clinical application.

Taxonomy (Hussain, 2021)

Kingdom	Plantae
Subkingdom	Tracheobionta
Super division	Spermatophyta
Division	Magnoliophyta
Class	Magnoliopsida
Subclass	Asteridae
Order	Lamiales
Family	Oleaceae
Genus	*Olea*
Species	*Olea europaea* L.

DESCRIPTION

Olea europaea Linn, often known as the *Zaitoon*, is a tiny, evergreen tree that grows to a height of 20 feet or more. Its leaves are short stalked, lanceolate, sometimes ovate, narrow, oblong, coriaceous, leathery, glabrous, attenuate, margin entire, pale green above with few scales, and silvery-whitish below in colour, petiole 5 mm, and 4-10 cm in length and 1-3 cm wide with 5-11 primary veins on either side of the midrib and raised adaxially (Ali, 1982; Khare, 2007).

The bark is pale grey and flowers are numerous, small and creamy in colour. The dark purple fruit is a drop about 3/4 inch long, ovoid and often pointed, the fleshy part filled with oil. The thick, bony stone has a blunt keel down one side. It contains a single seed. Olive oil has religious symbolism for healing and strength; this is related to its ancient use as a medicinal agent and cleansing of athletes by slathering them in oil then scraping them. (Ali, 2004)

Fig.1: *Olea europaea* (a) fruits

Fig. 1 (b) Leaves

The flowers are numerous, bisexual or functionally unisexual, small, sub-sessile, creamy white, and feathery bulled, mostly on the wood of previous year. Calyx is truncate with four little teeth and corolla short with four lobes and is 1-2 mm long. The olive fruit is small of which an outer fleshy part or skin surrounds a shell of hardened kernel. The fruit is ovoid, blackish-violet when ripe, normally 1–2.5 cm long, and small in wild plants than in orchard cultivates (M. X. L. Shu; 1996). The bark is pale grey in colour (Nadkarni, 2009; Sarwar; 2013).

Olive trees are normally distributed in the coastal areas of the eastern Mediterranean basin, the contiguous coastal areas of south Eastern Europe, northern Iran at the south end of the Caspian Sea, western Asia, and northern Africa (Ryan et.al. 1998).

Numerous ancient olive trees between 1,600 and 2,000 years old can be found all over Israel and Biblical Palestine, according to a survey. Two enormous olive trees in the Arab town of Araba and five trees in Deir Hanna, both in the Galilee, have specifically been found to be older than 3,000 years. According to Kislew et al. (2007), all seven trees are still producing olives.

Temperament (Mizaj)

- Oil (*Roghan Zaitoon*):
  - *Hot and Dry* in the first degree
- Fruit:
  - *Moderately Hot and Moist* (Sina, 2007)

Actions (Af'al)

As described in classical Unani texts like *Al-Qanoon fil-Tibb* and *Makhzan al-Adwiya*, *Zaitoon* possesses multiple therapeutic actions as illustrated in Table 1 **(**Sina, 2007; Ghani, 2004**)**:

Table 1. Therapeutic actions of O. europaea:

Unani Action	Arabic/Unani Term	Explanation
Laxative	*Mulayyīn*	Softens stools, helpful in constipation
Deobstruent	*Mufatteh-e-Sudad*	Opens obstructions in vessels and ducts
Resolvent	*Muhallil-e-Waram*	Reduces swellings and inflammations
Analgesic	*Musakkin-e-Alam*	Relieves pain
Cardioprotective	*Muqawwi-e-Qalb*	Strengthens the heart
Nervine Tonic	*Muqawwi-e-A'sab*	Strengthens the nervous system
Diuretic	*Mudir-e-Baul*	Promotes urination
Hepatoprotective	*Muqawwi-e-Kabid*	Strengthens the liver
Antihelminthic	*Qatil-e-Didān*	Kills intestinal worms
Skin Protectant	*Mohafiz-e-Jild*	Protects skin, used in massage oil
Hair Tonic	*Muqawwi-e-Sha'ar*	Nourishes and strengthens hair
Aphrodisiac	*Muqawwi-e-Bah*	Increases sexual vigour

Therapeutic Uses: Illustrated in Table 2 (Sina, 2007; Ghani, 2004).

Table 2. Therapeutic Uses

Condition	Unani Perspective
Hypertension	*Roghan Zaitoon* used for massage; helps lower blood pressure by calming the nerves
Constipation	Olive oil taken orally as a mild laxative
Arthritis & Joint Pain	Used as a topical analgesic and anti-inflammatory
Hepatic Disorders	Acts as a liver tonic; helps in conditions of *sudad-e-kabid* (liver obstruction)
Skin Diseases (like eczema)	Applied topically for its emollient and protective properties
Hair fall and Dandruff	Mixed with other oils and herbs for scalp nourishment
Intestinal Worms	Crushed seeds or oil used as an anthelmintic
Neurasthenia / Weakness	Strengthens nerves and body due to its warm, nutritive nature
Aphrodisiac Therapy	Used with Unani formulations for improving sexual performance
Diabetes & Metabolic Syndrome	Modulates metabolism, reduces fat accumulation; often used in dietary regimens

Phytochemistry

Phytochemical research carried out on *O. europaea* had led to the isolation of flavonoids, flavone glycosides, flavanones, iridoids, iridane glycosides, secoiridoids, secoiridoid glycosides, triterpenes, biophenols benzoic acid derivatives, xylitol, sterols, isochromans, sugars, and a few other types of secondary metabolites from its different parts. Phenolic compounds, flavonoids, secoiridoids, and secoiri-doid glycosides are present in almost all the parts of *O. europaea.* (Jerman et.al. 2010)

- **Secoiridoids & Glycosides**
  - *Oleuropein*: the most abundant, bitter secoiridoid, present in leaves and fruit (up to ~140 mg/g dry wt in green olives)
  - Responsible for antioxidant, anti-inflammatory, anti-atherogenic, antimicrobial, and anticancer effects.
  - Derivatives include demethyloleuropein, ligstroside, oleoside, verbascoside, nüzhenide
- **Simple Phenolic Alcohols**
  - *Hydroxytyrosol*: produced via oleuropein hydrolysis; highest in ripe olives (~4413 mg/100 g)
  - Exhibits potent antioxidant action, scavenges ROS, chelates metals, and induces phase II detox enzymes
  - *Tyrosol*: less potent but contributes to antimicrobial activity

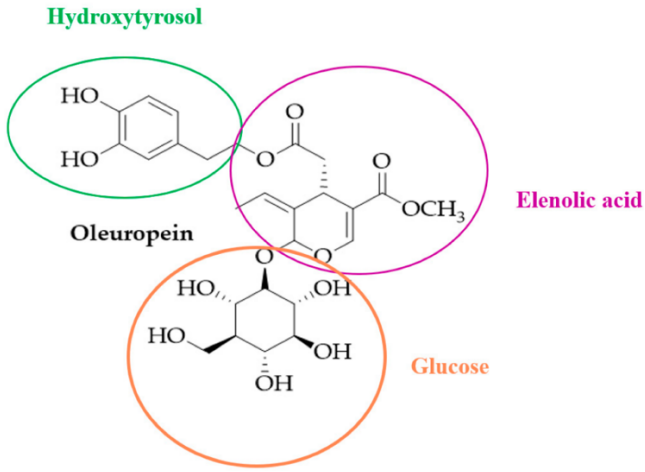

Fig.3 Structure of Hydroxytyrosol

- **Phenylethanoids**
  - *Oleocanthal*: found in extra-virgin olive oil; responsible for the characteristic pungent bite and has NSAID-like anti-inflammatory effects
- **Flavonoids & Phenolic Acids**
  - Quercetin, luteolin, apigenin (and their glycosides), chrysoeriol, rutin; caffeic, p-coumaric, vanillic acids present mainly in fruit skin
- **Triterpenes & Sterols**
  - *Squalene*: high levels (up to 0.7%) in olive oil; antioxidant, anticancer, and photoprotective roles
- **Other**
  - Tocopherols, chlorophylls, carotenoids, galactolipids, fatty acids (notably oleic acid), and minor hydrocarbons.

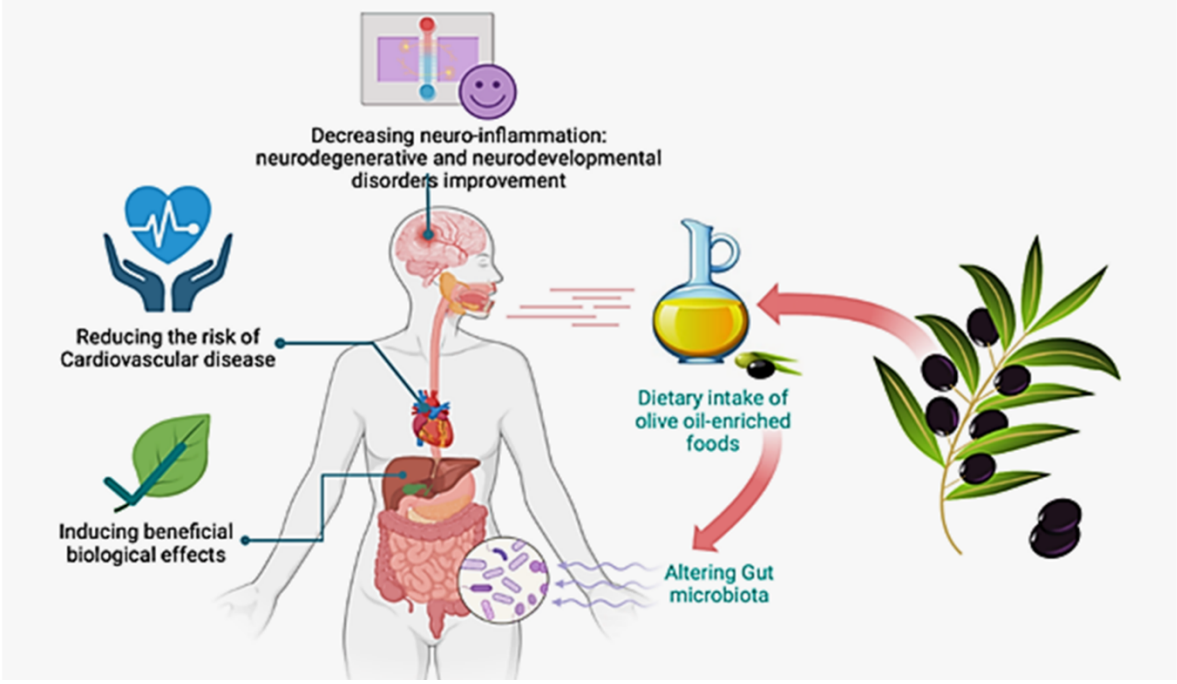

Fig.4. How olive acts on human body

Traditional and Contemporary Uses

O. europaea has a number of traditional and contemporary uses in medicine. Some of its exemplary uses are given below while the others are summarized in Table 3.

Table 3. Traditional and contemporary uses of O. europaea

S. no.	Part/preparation used	Ailment/use	Reference
1.	Leaves and fruits/infusions and macerations	Hypoglycemic, hypotensive	(Amel, 2013)
2.	Decoction or infusion of fruits and leaves	Antidiabetic	(Ali-Shtayeh, 2012)
3.	Olive oil + lemon juice	To treat gallstones	(Sheth et.al. 2005)
4.	Oil of seeds/taken orally	Laxative	(Al Khalil, 1995)
5.	Decoctions of dried leaves and fruit/oral use	Diarrhea, respiratory, and urinary tract infections	(Bellakhdar et.al. 1991)
6.	Olive oil/applied on scalp	To prevent hair loss	(Zargari, 1997)
7.	Boiled extract of fresh leaves/taken orally	To treat asthma	(Lawrendiadis, 1961)
8.	Boiled extract of dried leaves/taken orally	To treat hypertension	(Ribeiro, 1988; , Ribeiro et.al., 1986)
9.	Leaves extract in hot water	Diuretic	(Vardanian, 1978)
10.	Olive oil	Applied over fractured limbs	(Ghazanfar, 1993)
11.	Infusion of leaves/oral use	Antipyretic	(Gastaldo, 1974)
12.	Olive fruit	Skin cleanser	(Fujita, 1995)
13.	Infusion of leaves/oral use	Anti-inflammatory, tonic	(Ribeiro, 1986)
14.	Leaves of *O. europaea*	Antibacterial	(Haloui, 2010)
15.	Decoction of leaves	Antidiabetic, antihypertensive	(Tahraoui, 2007)
16.	Fruits and leaves	Hemorrhoids, rheumatism, and vasodilator	(Suntar et.al. 2010)
17.	Infusions of leaves	Eye infections treatment	(Guerin,1985)

O. europaea is extensively used in traditional medicine for a wide range of ailments in various countries. Its bark, fruits, leaves, wood, seeds, and oil are used in different forms, alone or sometimes in combination with other herbs. Oil of seeds is taken orally as a laxative and also applied externally as a balm for inflammation (Khalil, 1995).

Decoction of dried leaves and fruit are used orally to treat diarrhoea, respiratory and urinary tract infections, stomach and intestinal diseases, and as mouth cleanser (Bellakhdar et.al. 1991).

Continuous application of olive oil is also useful to prevent hair loss (Zargari, 1997).

In Canary Islands, the infusion prepared from olive leaves is taken orally as a hypotensive while it is administered through rectum for haemorrhoids (Darias, 1996; Darias, 1986).

In East-Africa the infusion of the bark of olive tree is taken for tapeworm infestation after soaking for whole night (Kokwaro, 2009).

In Greece hot water extract of olive leaves is taken orally to treat high blood pressure (Lawrendiadis, 1961).

In Italy, the extract of the essential oil of fruit is taken orally to treat renal lithiasis. It is applied externally to treat burns, ores, and rheumatism and to promote circulation (de Feo et.al. 1992). Tincture of olive leaves is taken in Italy as a febrifuge (Gastaldo, 1974) and applied externally as an emolument for ingrown nails and a restorer of epithelium (de Feo, 1993). In Japan olive leaves are taken orally for stomach and intestinal diseases and their essential oil is used orally for constipation and liver pain (Bellakhdar, 1991).

Olive oil has been taken orally to treat hypertension and agitation, as a laxative and vermicide in the United States (Giordano, 1989). Boiled extract of fresh or dried leaves is taken orally to treat asthma and hypertension and to induce diuresis (Vardanian, 1978; Ribeiro et.al 1988). The oil is applied externally over fractured limbs (Ghazanfar, 1993) and fruit is also known to be a skin cleanser (Fujita 1995). Infusion of leaves is taken orally to reduce fever (Gastaldo, 1974) and as anti-inflammatory tonic (Pieroni, 1996). Leaves of *O. europaea* are used in Tunisian folk medicine as a remedy for many inflammation types and bacterial infections such as gingivitis, otitis, icterus, and cough (Haloui et.al. 2010). Fruits and leaves of *O. europaea* are used to treat haemorrhoids and rheumatism, and as vasodilator in vascular disorders (Suntar et.al. 2010). Infusions of leaves are used as ointment to treat eye infections or as mouthwash to relieve sore throat (Guerin, 1985). Hot water extract of the fresh leaves of *O. europaea* is taken orally to treat hypertension and to induce diuresis in Brazil (Ribeiro, 1988). Decoction of leaves is used in Morocco to treat hypertension and diabetes (Tahraoui, 2007). Olive oil is mixed with lemon juice and is used to treat gallstones (Sheth et.al. 2005). Decoction or infusion of the fruits and leaves is used in Palestine to treat diabetes (Ali-Shtayeh, 2012; Alarcon, 1998). In Algeria the fruits and leaves of O. europaea are used to cure diabetes and hypertension (Amel, 2013).

EVIDENCE BASED RESEARCH

Antidiabetic and anti-oxidative Activity

In a study, hypoglycemic alloxan-diabetic rabbits were treated with oleuropein, a powerful antioxidant agent present abundantly in olive leaves and fruit, to reduce their oxidative stress. Oleuropein (20 mg/Kg body weight) was administered up to 16 weeks. After treatment it was observed that the blood glucose levels along with most of the antioxidants were restored to the values near to the normal control rabbits. The study proved the effects of oleuropein as anti hyperglycemic and antioxidative agent (Azzawaie et.al. 2006).

A placebo-controlled crossover trial was conducted in New Zealand to evaluate the effect of supplementation with olive leaf bio-phenols on insulin action and cardiovascular risk factors in middle-aged overweight men. 46 participants were selected to receive capsules of olive leaves extract or placebo for 12 weeks. The results concluded that OLE (olive leaf extract) supplementation resulted in a 15% improvement in insulin sensitivity compared to placebo. There were, however, no effects on lipid profile, ambulatory blood pressure, body composition, or liver function (Bock et.al. 2013).

Anthelmintic activity

Extract of *Olea europaea* showed Anthelmintic activity in vivo in lambs (Manolaraki, et. al. 2010), guinea pigs (Lans, et. al. 2007) and experimental lambs (Githiori, et. al. 2004).

Antimicrobial and Antibacterial Activity

Dried leaf extract of *Olea europaea* showed antimicrobial activity against *Campylobacter jejuni*, *Helicobacter pylori* and *Staphylococcus aureus* [including meticillin-resistant S. aureus (MRSA)] (Sudjana, et. al. 2009). Phenolic compounds in olive leaves showed antimicrobial activity in *in vitro* study against gram positive (*Bacillus cereus, B. subtilis and Staphylococcus aureus*), gram negative bacteria (*Pseudomonas aeruginosa, Escherichia coli and Klebsiella pneumoniae*) and fungi (*Candida albicans* and *Cryptococcus neoformans*) (Pereira, et. al. 2007). *Olea europaea* showed antimicrobial activity against *Haemophilus influenzae*, *Moraxella catarrhalis*, *Salmonella typhi*, *Vibrio para haemolyticus* and *Staphylococcus aureus* and considered a potential source of promising antimicrobial agents for treatment of intestinal or respiratory tract infections in man (Bisignano, et. al. 1999).

Olea europaea showed anti-mycobacterial activity against drug-resistant variants of M. tuberculosis (Camacho-Corona, et. al. 2008).

Anti-obesity Activity

Olea europaea showed progressive and significant weight loss in chickens and human in clinical study (Said, et. al. 2011).

Anticancer Activity

Maslinic acid a natural triterpene from *Olea europaea* L. has the potential to provide significant natural defence against colon-

cancer (Reyes-Zurita, et. al. 2009). Erythrodiol is the precursor of penta cyclic triterpenic acids present in *Olea europaea* showed anti carcinogenic activity, in colon adenocarcinoma cells erythrodiol exerts anti proliferative and proapoptotic activity (Juan, et. al. 2008). Olive leaf extracts showed protective effects on human promyelocytic leukemia HL-60 cells (Abaza, et. al. 2007).

Juan et al. investigated the anti-proliferative and apoptotic activities of erythrodiol (101) in human colorectal carcinoma HT-29 cells (Juan et.al. 2008).

Cardio-protective Activity

Olea europaea leaf extract (OLE) protective effect on isolated hearts and cultured cardiomyocytes, OLE suppresses the L-type calcium channel directly and reversibly (Scheffler, et. al. 2008). The phenolic compounds of olive leaves and olive oils showed positive effect on platelets count and reduced heart diseases. Olive leaf polyphenols derived from O. europaea L. leaves inhibited in vitro platelet activation in healthy, non-smoking males (Singh, et. al. 2008). Four triterpenoids, oleanolic acid, ursolic acid, and uvaol (UV), isolated from the leaves of African wild olive (*Olea europaea*, subsp. africana) showed significant, dose-response vasodepressor effect and sinus bradycardia, they acted as beta-adrenergic antagonists, blocking the effect of adrenaline and isoprenaline and also showed anti dysrhythmic effects on $CaCl_2$- and adrenaline-induced chemical arrhythmias, and on ischemia reperfusion arrhythmia. The crude extract containing all components, can provide a cheap and accessible source of additive to conventional treatment of hypertension, complicated by stenocardia and cardiac failure (Somova, et. al. 2004). Decoction of olive (*Olea europaea*) leaf showed vasodilator activity in isolated rat aorta (Zarzuelo, et. al.1991).

Insect repellent activity

Olea europaea showed insect/mosquito repellent activity (Karunamoorthi, et. al. 2008).

Antiallergic activity

Intra nasal administration of BALB/c in mice with peptide-PLGA (poly lactide-co-glycolide) micro particles before sensitization to *Olea europaea* led to a significant inhibition of serum allergen-specific IgE and IgG1 antibody levels (Marazuela, et. al. 2008a). Intranasal pre-treatment of mice with the peptide led to suppress serum specific IgE, IgG1 and IgG2a antibody levels, and markedly reduced proliferative T-cell response and Th2 cytokine production, but increased IFN-gamma secretion in spleen cell cultures (Marazuela, et. al. 2008b)

Antifungal activity

Olive extracts and some of their pure compounds have shown antifungal activity in vitro against Trico phyton mentagrophytes, Micro *sporum canis* and *Candida spp*. (Battinelli, et. al. 2006).

Antiviral activity

Extract of olive tree leaf (*Olea europaea*) showed antiviral activity against the viral haemorrhagic septicaemia virus (VHSV), a salmonid rhabdovirus (Micol, et. al. 2005).

Antihypertensive Activity

Triterpenoids isolated from the leaves of *Olea europaea* from Greece, from wild African and from Cape Town showed antihypertensive activity in Dahl salt-sensitive (DSS), insulin-resistant rat genetic model of hypertension (Somova, et. al. 2003). The *aqueous extract* of olive (*Olea europaea*) leaf showed stimulatory action on thyroid, unrelated to the pituitary (Al-Qarawi, et. al. 2002). Olive leaf extract showed blood pressure lowering activity in rats against blood pressure induced by L-NAME (NG-nitro-L-arginine methyl ester). (Khayyal, et. al. 2002). *Aqueous extract* of *Olea europaea* L showed antihypertensive activity and also decrease in glycemia and calcemia (Cherif, et. al. 1996). Alcoholic extract of leaf of *Olea europaea* Linn. showed diuretic and antihypertensive effects in conscious unrestrained rats (RibeiroRde, et. al. 1986). *Aqueous* leaf extract of *Olea europaea* L. showed antihypertensive activity in treated animals (Fehri, et. Al 1994)

The cardiotonic effects of three triterpenoids, namely, uvaol, ursolic acid, and oleanolic acid isolated from the leaves of *O. europaea*, were examined. Oleanolic acid and uvaol showed a significant, dose-response vasodepressor effect; therefore, olive oil was suggested as a natural and cheap source of controlling hypertension (Somova, et.al. 2004).

Anti-atherosclerotic activity

The triterpenoids of *Olea europaea* showed anti-atherosclerotic, in Dahl salt-sensitive (DSS), insulin resistant rat genetic model of hypertension (Somova, et. al. 2003).

Anti clastogenic activity

Polyphenolic compounds of Olive leaves is the only substance that showed a significant anticlastogenic activity both before and after X-ray irradiation treatments (Benavente-Garcia, et. al. 2002).

Antibacterial Activity

Aldehydes from olive flavour showed significant antibacterial activity against *Gram-positive* and *Gram-negative* microorganisms (Bisignano, et. al. 2001)

Hypo-uricaemic activity

Aqueous leaf extract of *Olea europaea* L. showed hypo-uricemia in treated animals (Fehri, et. al 1994)

Diuretic activity

Alcoholic extract of leaf of *Olea europaea* Linn. Showed diuretic effects in conscious unrestrained rats. (Ribeiro Rde, et. al. 1986)

CONCLUSION

As olive oil comes from a blessed tree and has both nutritional and medicinal benefits, the Prophet Mohammad (PBUH) urged people to use it. In addition, *Zaitoon* revered since ancient times, holds a significant place in both traditional medicine systems like Unani and modern pharmacological research. Its rich phytochemical profile—including phenolic compounds, flavonoids, oleuropein, and hydroxytyrosol—contributes to its wide spectrum of therapeutic properties such as antioxidant, anti-inflammatory, cardioprotective, antimicrobial, and anticancer activities. Unani literature has long recognized *Zaitoon* for its role

in strengthening the brain, liver, and gastrointestinal system, as well as its usefulness in managing chronic conditions such as arthritis, skin disorders, and cardiovascular ailments.

The convergence of classical wisdom and contemporary science highlights the immense potential of *Zaitoon* as a natural therapeutic agent. Continued research is warranted to explore its molecular mechanisms, optimize its medicinal formulations, and validate its efficacy through clinical trials. Incorporating olive-based preparations into mainstream healthcare could pave the way for safer and more holistic treatment strategies.

Consent of Publication

Not applicable

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Conflict of Interest

Dr. Jamal Akhtar serves as the Associate Editor of the International Journal of Unani and Traditional Medicine. He had no involvement in the editorial review or decision-making process regarding this manuscript. All authors declare that there are no competing interests.

Ethics Statement

Ethical approval is not applicable as the research did not involve any testing on animals or humans.

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