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REVIEW ARTICLE

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## A REVIEW: PLANTS USED IN EYE INFECTION WITH SPECIAL EMPHASIS ON OLEA EUROPAEA

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### ABSTRACT

Olea europaea, or olive is an important part of the Mediterranean diet. We also examined green nanoparticles formulated in green olive for the treatment of the treatments of eye infections They are also linked to many health benefits, especially the prevention of heart disease and cancer. According to previous studies, olive leaves contain antioxidants that can reduce inflammation and prevent infection. Olive leaves can reduce blood sugar level and cholesterol. Olive leaf show promise in preventing diabetes and Alzheimer's disease. Olea europaea leaf extract contains a bioactive substance called oleuropein which is known to have antioxidant and anti-inflammatory properties. The oil is rich in monounsaturated fats, and studies show that these fats will help to prevent or slow the age of infection. It also helps to improve alertness and memory by promoting healthy neurotransmitter activity and plays an important role in strengthening the immune system by neutralizing free radical. The aim of this study is to determine the properties of European olive leaf and neem leaf.

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## INTRODUCTION

Olea europaea commonly known as brown oil, belongs to the Oleaceae family and is one of the fruits grown in the Mediterranean region of Central Asia. The most important countries producing olive are Italy, Spain, Turkey, etc. the main active ingredients of olive include oleic acid and phenolic compound. Phenols has antioxidant properties and is the most abundant substance in olive oil. Olive oil is the best oil that reduces bacteria and viruses of eye. Most people suffer from eye infection caused by various eye diseases and allergies, as well as expired eye drops. The eye infection covers white parts of the eye. Infection is very contagious and can spread through contact with the patients occult eye. Some symptoms of eye infection include redness, itching and watery eyes. This eye infection is the common type of infection that can affect anyone. Eye infection occurs acutely and chronically it usually gets better with in few days, but if it persists, show your doctor. The presence of pain, sensitivity to light and blurred vision are important in the diagnosis of eye diseases, because these symptoms are not usually seen in simple infection diseases and may be signs of intraocular diseases, corneal ulcers or glaucoma. This is achieved by inhibiting the activity of mitochondria and electron transport chains reducing the production of free radicals improving the body ability to eliminate free radical and improving the body antioxidants capacity Additionally various human animal in vivo and in vitro studies have shown that olive oil has a positive effect on some physiological function antibacterial properties of tyro sol and oleuropein against various diseases that cause stomach and respiratory

tract infection olive oil can be refined aur unrefined. Green synthesis which refers to the production of nonpractical in an environmentally friendly and sustainable way without the use of chemical solvents has attracted the attention of biological process in recent year. Green synthesis has many advantages compared to chemical and physical method it is nontoxic, pollution free, environmentally friendly economical and more stainable. However there are problem with Raw material extraction, rection time and quality of the final product for example, the raw material source is not large, the synthesis time is long and the particle size is quite homogenous. In the review method for the green synthesis of nanomaterial and summarised and the relevant limitation are evaluated. This article hopes to highlight the main issue and problem in the green synthesis of nanoscale metal nanoparticle and provide promising direction for future of the review provide an in depths analysis and discussion of green synthesis and has the potential to support the developments of future green research.

### Plant profile of Olea Europaea

**Scientific Name:** Olea europaea L.

**Synonym:** Olea Africana mill

**Biological source:** Olive oil is fixed oil obtained from the ripe fruit of olea europaea

**Family:** Oleaceae

**Chemical Constituents:** Monounsaturated fatty acid and saturated fatty acid.

**Cultivation:** Widely cultivated in garden for the production of olive oil.



## Pharmacology Action

### 1. Anti inflammatory

Olive tree by-products have been deeply studied as an invaluable source of bioactive compounds. Several *in vitro* and *in vivo* studies showed that olive leaf extract (OLE) has anti-inflammatory and antioxidant properties. Here, we wanted to assess the valuable benefits of two less-studied OLE components—3,4-DHPEA-EDA (Oleacin, OC) and 3,4-DHPEA-EA (Oleuropein-Aglycone, OA)—directly purified from OLE using a cost-effective and environmentally sustainable method, in line with the principles of circular economy. OLE, OC and OA were then tested in human cellular models involved in acute and chronic inflammation and in the pathogenesis of viral infections, i.e., lipopolysaccharide (LPS)-treated monocyte/macrophages (THP-1) and endothelial cells (HUVECs), senescent HUVECs and Poly(I:C)-treated small airway epithelial cells (hSAECs). Results showed that OC and OA are efficient in ameliorating almost all of the pro-inflammatory readouts (IL-1 $\beta$ , TNF- $\alpha$ , IL-8, ICAM, VCAM) and reducing the release of IL-6 in all the cellular models. In hSAECs, they also modulate the expression of SOD2, NF-kB and also ACE2 and TMPRSS2, whose expression is required for SARS-CoV-2 virus entry. Overall, these data suggest the usefulness of OLE, OC and OA in controlling or preventing inflammatory responses, in particular those associated with viral respiratory infections and aging.

### 2. Antidiabetic activity

Extracts prepared from *Olea europaea* leaves showed *in vitro* antidiabetic and antioxidant activities [4]. Moreover, various phenolic acids, oleanolic acid, and oleuropein isolated from *Olea europaea* leaves have been attributed to the *in vitro* antidiabetic and antioxidant activities [5]. The antidiabetic effect of an alcohol extract of olive (*Olea europaea* L.) leaves was investigated in normal and streptozotocin-induced diabetic rats. The oral administration of the olive leaves extract (0.1, 0.25 and 0.5 g/kg body wt) for 14 days significantly decreased the serum glucose, total cholesterol, triglycerides, urea, uric acid, creatinine, aspartate amino transferase (AST) and alanine amino transferase (ALT) while it increased the serum insulin in diabetic rats but not in normal rats ( $p < 0.05$ ). A comparison was made between the action of olive leaves extract and glibenclamide (600 microg/kg), a known antidiabetic drug. The antidiabetic effect of the extract was more effective than that observed with glibenclamide.

### 3. Antimicrobial activity

The olive tree (*Olea europaea* L.) is an important tree found in the Mediterranean countries. Olive extract is marketed as a natural medicine with wide-ranging health benefits.<sup>1</sup> Affirmation took place

on the antioxidant activity of the extract and its corresponding health benefits such as cardioprotective and chemopreventive effects.<sup>2</sup> Also the leaves are important for their secondary metabolites such as the secoiridoid compounds oleacein and oleuropein, the former responsible for hypotensive activity and the latter for hypoglycemic activity.<sup>3</sup> Several reports have shown that olive leaf extract has the capacity to lower blood pressure in animals,<sup>4</sup> relieve arrhythmia and prevent intestinal muscle spasms.<sup>5</sup> Olive leaves and its disease-preventing effects have been attributed to its fatty acid profile, as well as the presence of a number of bioactive components such as tocopherols, phospholipids, and phenolic compounds.<sup>6</sup> Olive extract contains biophenols with varied therapeutic properties. The phenolics content of olive depends on cultivar, climate, irrigation regimes, degree of ripeness of the fruit, and elaboration process.<sup>7</sup>

## 4. Antiviral Activity

The present study aims to assess the antioxidant and antiviral effectiveness of leaf extracts obtained from *Olea europaea* L. var. *sativa* and *Olea europaea* L. var. *sylvestris*. The total antioxidant activity was determined via both an ammonium phosphomolybdate assay and a nitric oxide radical inhibition assay. Both extracts showed reducing abilities in an *in vitro* system and in human HeLa cells. Indeed, after oxidative stress induction, we found that exposition to olive leaf extracts protects human HeLa cells from lipid peroxidation and increases the concentration of enzyme antioxidants such as catalase (CAT), superoxide dismutase (SOD), and glutathione peroxidase. Additionally, OESA treatment affects viral DNA accumulation more than OESY, probably due to the exclusive oleuropein content. In fact, subtoxic concentrations of oleuropein inhibit HSV-1 replication, stimulating the phosphorylation of PKR, c-FOS, and c-JUN proteins.

## Taxonomical classification of *Olea europaea*

1	Kingdom	Magnolia
2	Class	Magnolia's psi dicotyledonous plants
3	Division	Subgenera Olea, paniculated
4	Order	Lamiales
5	Family	Oleaceae
6	Genus	Olea-olive
7	Species	<i>Olea europaea</i> l- olive
8	Common Name	Olive, Greek Olive, Wilson olive

## Benefits of Herbal Eye drop

- It helps to reduce eye fatigue caused by eyes strain
- Cool and relax tired eyes
- There is protection against dust and pollution
- Keep your eyes healthy and bright
- Rejuvenates tired eyes by colling them down
- Keep eyes lustrous
- Helps to Aids in clearing vision
- Purifies eye and remove dirt
- Lubrication of eye

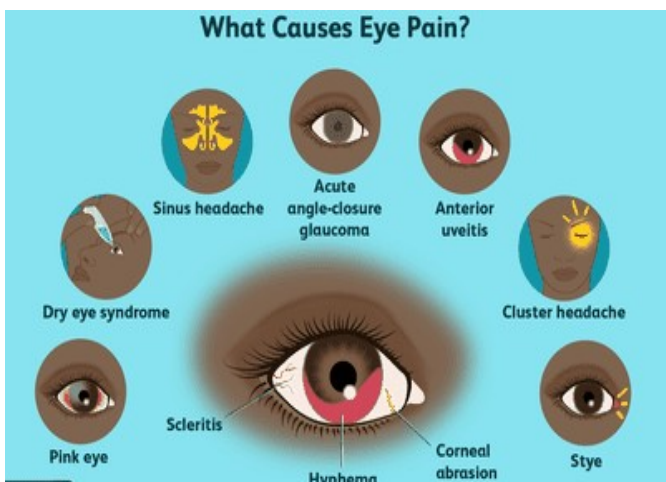
## Advantages of Herbal Eye drop

- Made from various Ayurvedic herbs which is obtain from natural ingredients
- Help in the improvements of eye vision
- Keep eyes fresh and strain- free
- It relaxes the eyes, prevents infections and removes dust from the eyes.
- Herbs always give a good mood to your eye
- It reduces dryness and irritation and increases comfort
- They prevent further damage by keeping the eye lubricated
- They have the quick absorption and effects
- Better patient compliance
- Increased shelf life

## Application of *Olea Europaea*

- It has been used to treat diabetes

- Hypertension
- Mouth cleanser
- Bacterial and viral infection of eye
- Inflammation
- Stomach diseases
- Urinary tract infection



### Therapeutical Uses of Olea europaea leaf

- Reduce blood sugar level
- Reduce cholesterol and uric acid level
- Cooling effect to eye
- Reduce eye discharge
- Relieve eye inflammation
- Anti-inflammatory activity

### Nutritional composition of olea europaea

1	Protein	17%
2	Total dietary fibre	47%
3	Fatty acid	62%
4	Phenolic components	24%
5	Mineral	29%
6	Calcium	12%

### Collection Material

Sr.no	Ingredients	Function
1	Olea europaea leaf	Reduce bacterial infection
2	Neem	Improving vision
3	Green nanoparticle	Colling sensation
4	Ethanol, Phenol, Acetone	Solvent
5	Distilled water	Purified water

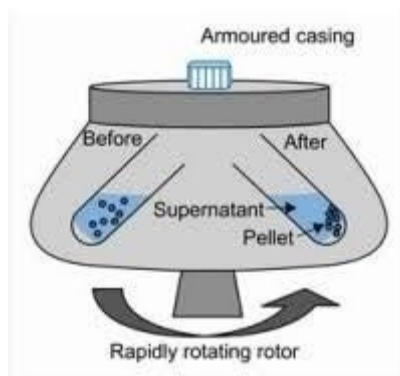
### Method

We can prepare extraction method by different process

- Maceration
- Centrifuged

**Maceration:** The extraction method used in maceration. Olea europaea leaf is macerated in 1000ml of boiling water for 4-5 days. The macerated extract was collected and filtered out by using simple filtration method and filtered is collected in vessels.

**Centrifuged:** After the final mixture it is centrifuged at 1100-11000rpm and olea europaea green nanoparticle was separated from mixture.



### Evaluation parameter

- UV-Visible Spectroscopy
- Centrifuged
- Physical Test

## CONCLUSION

The extract of olea europaea can be made in the form of eye drop and this eye drop is used for the prevention of viral and bacterial infection form eye. In this study the chemical test of green nanoparticle by olea europaea leaf aqueous extracted was run by UV- visible and this eye drop was supporting the treatments of eye infection.

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