



## PHYTOTHERAPEUTIC USE OF *EUPHRASIA OFFICINALIS* EXTRACTS IN ANIMALS AND HUMANS

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### Abstract:

Plants of the genus *Euphrasia*, commonly known as eyebright, belong to the family Orobanchaceae and are scientifically referred to as *Euphrasia officinalis*. They are annual, herbaceous, semi-parasitic plants known in folk medicine, phytotherapy, and homeopathy for their numerous biological activities, including anti-inflammatory, antioxidant, anticancer, antifungal, antimicrobial, antiviral, antiepileptic, hypotensive, and hepatoprotective properties.

In traditional medicine, aqueous extracts of *E. officinalis* are frequently used with high efficacy in treating various eye conditions such as conjunctivitis from diverse causes, inflamed and coagulated eyes, ulcers, and blepharitis. Alcoholic extracts also demonstrate beneficial antioxidant activity and significant anti-inflammatory effects, while tinctures and essential oils possess antimicrobial and antifungal properties.

In recent years, numerous studies have highlighted the ecological synthesis of nanoparticles using extracts from the leaves of *Euphrasia officinalis*, and the anticancer potential has been demonstrated through mechanisms of high cytotoxicity against human lung and cervical cancer cells.

### • Introduction

- Class Magnoliopsida
- Subclass Asteridae
- Order Scrophulariales
- Family Scrophulariaceae
- Genus *Euphrasia*
- Species *Euphrasia officinalis* L.

Eyebright grass has been used in folk medicine and homeopathy for a long time.

### • Material and method

Folk medicine typically uses aqueous tinctures from the above-ground parts of the eyebright for the treatment of eye disorders (cataracts, glaucoma, conjunctivitis, etc.) and diseases of the upper respiratory tract and gastrointestinal tract.

In previous literatures, the high-performance liquid chromatography (HPLC) and liquid chromatography-mass spectrometry (LC-MS)/MS methods were used to identify phenolics, flavonoids, and acteoside in *E. officinalis*.

### • Results and discussions

Pharmacological investigations of eyebright extracts revealed various types of biological activity, including hepatoprotector, hypotensive, anti-inflammatory, antimicrobial, and antitumor properties.

Several researchers have reported that nanoparticles together with *E. officinalis* extracts can induce toxicity on cancer cells and therefore can be used as potent therapeutic agents for cancer.

**Cytotoxic effect**  
**Antibacterial activity**  
**Biofilm inhibition activity**

### • Conclusions

In conclusion, chemical analysis revealed a number of antimicrobial active substances present in *E. officinalis*, and its antifungal and antibacterial activity against Gram-positive as well as Gram-negative bacteria was confirmed.

