

## Fieldpoppy



### BOTANY

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*Papaver rhoeas L.* belongs to the *Papaveraceae* family and its common name is poppy or red weed.

It is a wild plant with an annual cycle that can reach over 50 cm in height. It has erect stems with few ramifications and fine hairs. The simple and elongated leaves, which appear alternatively along the stem, without petiole, are pinnate and very serrated on the margins, with a single midrib. The flowers have an intense bright red color. They are bell-shaped, nearly spherical, and up to 50 mm in diameter. They have 4 orange-red thin petals and 2 hairy sepals. The petals are very delicate and they quickly wither. The stamens, black in color, form a ringed cluster around the gynoecium, which gives it the appearance of a black button.

The flowering season occurs in spring and summer. The flowers emerge from a bud which until maturity is looking down, towards the ground, a position that is normalized when flowering, being fully erect.

The fruit is a pale green conical capsule with a sort of lid on the top (operculum), which contains numerous seeds which escape through the cracks of the operculum. The whole plant oozes white latex.

This species prefers rather dry soils and poor in organic substances, waste lands, embankments and grasslands, and therefore it is common on roadsides and fields under full sunlight.

Fieldpoppy extract is obtained from the petals of *Papaver rhoeas*.

## CHEMISTRY

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Poppy mainly contains anthocyanidin and its glucosides (anthocyanin), and alkaloids (rheadine among others). However, it does not contain morphine, unlike the *Papaver somniferum* variety (opium poppy).

In particular, petals contain mucilages, anthocyanoside colorants derived from cyanidin (mecocyanine and cyanine), benzylisoquinoleinic alkaloids, isoquinolinic alkaloids and alkaloids derived from tetrahydro-3-H-3-benzodiazepine, including rheadine (which is the most abundant with nearly 50% of the total), rhoearubine I and II, rhoeagenine, isorhoeadine, papaverine and protopine. The total alkaloid content is close to 0.07-0.12%.

The sap and capsules also contain rheadine, with causes a slightly sedative effect.

## TRADITIONAL USES

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Poppy has been associated with agriculture since ancient times. Its life cycle is adapted to most cereal crops, flowering and seeding before harvest.

Traditionally, it has been used in fertility, love, money and luck spells. According to an old recipe, if poppy seeds are added to someone's food, that person will fall in love, although this can be because the person is too groggy or sedated. On the other hand, and due to its sedative power, it is also associated to dream divination.

The plant has emollient properties and in ancient times it was widely used in pulmonary disorders. It is also used as red coloring matter for potions, gargles and spirits. Its taste is mucilaginous and a bit bitter.

At a physiological level, poppy exerts a mild sedative effect on the nervous system and it is useful to alleviate coughs and cause expectoration. Although as a sedative it should only be administered when absolutely necessary, it does not have any major side effects or toxic effects when taken in infusion. It has also been used against insomnia in children and elderly people.

The flowers are indicated for bronchitis and irritating cough. They are used in syrup form and they are an ingredient in chest, anodyne and expectorant herbal teas.



The petals are used to prepare syrups, non-alcoholic beverages and also herbal teas, mixed with other flowers. Due to their alkaloid composition, they are used in cases of anxiety, insomnia, frequent spasmodic cough in asthmatic processes, pertussis and gastrointestinal spasms. In addition, they have an emollient and antitussive action. It has also been frequently used on the skin and eyes in cases of conjunctivitis and blepharitis (inflammation of the eyelids).

The seeds are often used as a condiment and in bakery. Toasted seeds are highly appreciated to season seeded breads and, sometimes, they are used in combination with sesame or sunflower seeds in whole meal bread.

## COSMETIC PROPERTIES

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### **Activating activity of blood circulation and vasoprotective activity**

Poppy's rich composition in alkaloids gives it activating properties of general blood circulation. This characteristic was demonstrated in a study in which different plant alkaloids were evaluated on mice (Wada, K., 1997). After intravenous administration of the alkaloids, it was observed that blood flow increased. Thus, it can be deduced that the alkaloids produce a peripheral vasodilation leading to increased blood flow.

The action of papaverine has been confirmed in patients with circulation problems to improve general circulation, since it increases blood flow. In a group of patients it was found their blood flow increased after administering papaverine, as a therapy (Bosmanský, K., 1985).

On the other hand, anthocyanidins act as vasoprotectors since, at the level of vessel structural layer, they stabilize collagen fibers, create bonds between polypeptide chains and reduce capillary permeability.

Therefore, fieldpoppy extract has a very interesting cosmetic application in products for the reduction of varicose veins and edema, in products with a draining action and as a stimulant of general circulation.



### **Antioxidant activity**

Anthocyanidins are known as powerful antioxidants, even more active than vitamins E, C and beta-carotene, which are the basic antioxidants. In dermatology, results of this activity and of the inhibition they cause on the enzymes responsible for skin deterioration have been seen.

It has also been observed that these compounds protect and reduce oxidative stress caused by prolonged exposure to UV rays. This exposure causes the creation of reactive oxygen species (ROS) and also extensive damage to cellular and dermal tissue. In 2005, Tarozzi, A., *et al.* assessed

the protective effect in human keratinocytes. Cells pretreated with anthocyanidins did not create apoptotic cells and the fragmentation of their DNA decreased, as well as the release of hydrogen peroxide, indicator of ROS creation. Moreover, the treatment with anthocyanidins led to an increase in the antioxidant capacity of the membranes, confirming that they are highly beneficial protective and antioxidant agents.

Thus, fieldpoppy is very useful for the formulation of antioxidant, photoprotective and anti-irritant cosmetic products, as well as for products to protect hair coloration and for the protection of skin and hair integrity.

### **Anti-aging activity**

Poppy anthocyanidins promote the synthesis of collagen and mucopolysaccharides, main components of the connective tissue structure, offering great benefits for the skin and preventing its degeneration over

the years. Anthocyanidins help strengthen and maintain collagen, which means that skin elasticity and functionality also improves.

Some poppy alkaloids, such as papaverine, act as muscle relaxants avoiding the formation of expression lines on mature skin.

Therefore, fielpoppy is highly recommended for anti-aging cosmetic products, and also for products designed to prevent the formation of expression lines.

## COSMETIC APPLICATIONS

Action	Active	Cosmetic application
Blood flow activator and vasoprotective	Alcaloids Anthocyanidins	Blood flow activator Vasoprotective Tonic
Antioxidant	Anthocyanidins	Antioxidant Photoprotection Hair color protector
Anti-aging	Anthocyanidins Papaverine	Anti-aging Firming

## RECOMMENDED DOSE

The recommended dose is between 0.5% and 5%.

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