Everlasting-Eco

BOTANY

*Helichrysum stoechas* (L.) Moench., common name: everlasting. This is a perennial branched shrub, with stems that may grow erect or lying on the ground, up to 1-2 palms long. The leaves are very narrow and whitish. The flower caps – appearing on the tillers – are closely clustered very small heads, some 5-6 mm in diameter, with rounded involucre composed of a number of shining golden scales. The flowering season starts on May. This plant grows on hills and slopes, in every kind of soil, sea sands, etc. in almost the whole of Spain and Portugal.

Everlasting-Eco extract is produced from the flowers of *Helichrysum stoechas*.

CHEMISTRY

**Flavonoids**

Free flavonols and heteroside flavonols (kaempferol, quercetrin and its 3-O-glucosides, tiliroside), flavones (apigenin, luteolin and luteolin-7-O-glucoside), flavanones (naringenin, helichrysin A and B, salipurposide), methoxyflavones and methoxyflavonols (gnaphaliin, 3,5,7-trihydroxy-6,8-dimethoxyflavone and 3,5,8-trihydroxy-7-methoxyflavone), chalcones (isohelichrysin, isosalipurposide). (www.fitoterapia.net)

**Essential oil**

In general, the main components are monoterpene hydrocarbons (α- and β-pinene, limonene, α- and γ-curcumene) and sesquiterpene hydrocarbons (β-cariophyllene); monoterpene alcohols (nerol, geraniol, linalol); esters (acetate, butyrate, isovalerate, caprylate and beryl-propionate); aldehydes (furfural, isovaleranal) and phenols (eugenol). (www.fitoterapia.net)
α-pyrene and floroglucinol derivatives
Italipyrone, italidipyrone, 23-methylitalidipyrone, helipyrone, plicatipyrone, arenol and homoarenol.
(www.fitoterapia.net)

Acetophenone derivatives
4-hydroxy-3-(3-methyl-2-butenyl) acetophenone, 4-hydroxy-3-(2-hydroxy-3-isopentenyl) acetophenone,
12-hydroxytremetone, 13-acetoxytol, 4-hydroxy-3-(3-methyl-2-butenyl) acetophenone-4-O-glucoside,
12-hydroxytremetone-12-O-glucoside, 4-hydroxy-3-(2-hydroxyethyl) acetophenone-4-O-glucoside.
(www.fitoterapia.net)

Other active principles
Triterpenes (ursolic acid), phytosterols (β-sitosterol, daucosterol), organic acids (caffeic, caprylic,
isovaleric).
(www.fitoterapia.net)

TRADITIONAL USES
Everlasting is helpful in the treatment of inflammation and chronic cough, bronchitis, fever, muscle ache,
phlebitis and liver conditions; it also fights allergy reactions such as asthma.

COSMETIC PROPERTIES

Antioxidant activity
Flavonoids and acetophenones play the major antioxidant role in this plant. Flavonoids – especially
gnafafalin and tiliroside – inhibit enzymatic and non-enzymatic lipid peroxidation (www.fitoterapia.net).

The chemical criteria to establish flavonoids antioxidant capacity are:

- Presence of an O-hydroxyl structure in the B ring, which confers higher stability to the radical
  form and participates in electron delocalization.
- A double bond, in conjugation with the 4-oxo functional group in the C ring
- 3- and 5-OH groups with 4-oxo function in the A and C rings necessary to reach the maximum
  antioxidant power

![Fig.1. Structure of the flavonoid quercitin.](image)

The antioxidant activity of flavonoids results from the combination of their iron chelating activity and their
ability to scavenge aging-inducing free radicals (FR). Flavonoids can inhibit oxidases such as
lipooxygenase (LO), cyclooxygenase (CO), mieloperoxidase (MPO), NADPH oxidase and xanthine
oxidase (XO), thus preventing the in vivo formation of reactive oxygen species (ROS) and organic
hydroperoxide. Additionally, it has been found that flavonoids inhibit enzymes indirectly involved in
oxidative processes, such as phospholipase A2 (PLA2), and stimulate other enzymes with well-known
antioxidant properties, such as catalase (CAT) and superoxide dismutase (SOD). Through these
mechanisms, flavonoids impair the propagation reactions of free radicals and affect their very formation.
Besides scavenging free radicals, chelating metal ions and inhibiting oxidase enzymes, flavonoids may increase the availability of endogenous antioxidants and the activity of antioxidant enzymes. Additionally, they inhibit enzymes involved in the formation of ROS (Pérez Trueba G., 2003).

Thus, everlasting extract is recommendable to formulate cosmetic products for the protection of skin and hair against oxidative processes.

**Antimicrobial activity**

The antimicrobial activity of the chloroform and methanol extracts of 140 frequently used medicinal plants, was studied in vitro against 6 different microorganisms. The compounds observed to produce antimicrobial effects were flavonoids, terpenoids, phenol acids, anthraquinones and other polyphenol substances. One of the most relevant species, in regards to its experimentally demonstrated properties, was *H. stoechas*, which showed activity against *Staphylococcus aureus*, *Candida albicans* and *Mycobacterium phlei*. A phenol like substance was isolated from this plant by means of chromatographical techniques, which showed activity against the tested Gram-positive cocci and bacilli, with minimum inhibitory concentrations (MIC) between 3 and 6 μg/ml (Recio Iglesias MC, 1987).

Rios JL et al (1991) carried out fractionation of the dichloromethane extract of the aerial parts of *Helichrysum stoechas*. Seven compounds were isolated, which showed varying degrees of antimicrobial activity against Gram-positive bacteria. These compounds included italipyrone, plicatipyrone, helipyrone, homoarenol, 4,4′-dihydroxy-5,6,5′,6′-tetramethyl-3,3′-methylen-di-pyr-2-one and helipyrone with one methyl substitution; the later two compounds had not been previously reported in other species of this genus.

Therefore, everlasting extract is recommended to formulate cosmetic products with purifying and antiseptic activity.

**Anti-inflammatory activity**

The essential oil, the extracts and the isolated principles have shown in vivo anti-inflammatory properties and some of the corresponding action mechanisms have been elucidated. One of the most relevant isolated principles is the phenol compound gnafalin, a flavone whose action mechanism is related to inhibition of the arachidonic acid metabolism. The derivatives 4-hydroxy-3-(3-methyl-2-butenyl) acetophenone and 4-hydroxy-3-(2-hydroxy-3-isopentenyl) acetophenone reduce the edema induced by several irritant agents and have analgesic properties. The action mechanism is also related to inhibition of 5-lipoxygenase and cyclooxygenase. Ursolic acid inhibits elastase activity in human leukocytes and histamine release; it is also a selective inhibitor of cyclooxygenase-2 (www.fitoterapia.net).

Therefore, everlasting extract is recommended to formulate cosmetic products with anti-irritant activity.
BIBLIOGRAPHIC EFFICACY TEST

Carini M et al (2001) studied the polyphenol compounds with antioxidant activity in *Helichrysum stoechas*.

1. Experimental method
Liquid Chromatography-Ion Trap Mass Spectrometry with an atmospheric pressure chemical ionization (APCI) interface in the negative and positive-ion modes in parallel to UV-diode-array detection (DAD), was applied for the rapid detection/characterization in crude extracts, of the water-soluble antioxidant phenolics from *Helichrysum stoechas*.

2. Results
Water-soluble *H.stoechas* extract, standardized for total polyphenols and kaempferol-3-glucoside, showed powerful antioxidant action *in vitro*, when tested on artificial membrane systems (phosphatidylcholine liposomes) and on a cellular model (rat erythrocytes).

COSMETIC APPLICATIONS

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<th>Cosmetic Application</th>
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RECOMMENDED DOSE

The recommended dose is between 0.1% and 3.0%.

BIBLIOGRAPHY


Website: