IVY LEAF POWDER EXTRACT

Bibliographic Dossier

Active ingredient
Hederae helicis fol extr.s.siccum, Art. No. 0085151
Dry extract of ivy leaves (6 - 7:1), extraction solvent: ethanol 40 % (m/m)

Therapeutic indications
The German Commission E approved ivy leaf for treatment of catarrhs of the respiratory passages, as well as symptomatic treatment of chronic inflammatory bronchial diseases [1]. Therapeutically, the secretolytic and bronchospasmolytic properties of the drug are used.

Dosage recommendations
Adults:
300 mg per day of cut herb [1], corresponding to approx. 46 mg of 85151 Extract
300 mg – 945 mg drug [2], corresponding to 46 – 145 mg 85151 Extract

Children [2, ethanol-free liquid preparations] :
- 4 – 12 years:
  200 – 630 mg drug, corresponding to 30 – 97 mg 85151 Extract
- 1-4 years:
  150 – 300 mg drug, corresponding to 23 – 46 mg 85151 Extract
- Babies 0 – 1 year:
  50 – 200 mg drug, corresponding to 8 – 30 mg 85151 Extract

The positive monograph of the Commission E on ivy leaf (published in 1988) and its dosage recommendation are founded on the then available evidence, that was almost exclusively based upon a preparation containing 47% Ethanol (Prospan®). From the pharmaceutical point of view it was however to be expected, that ethanol-free dosage forms would necessitate a higher dosage. This has been confirmed by controlled clinical studies [3]. The addition of ethanol increase the bioavailability of ivy leaf dry extracts. Hence, dosage forms without ethanol require a significantly higher dose of the extract, in order to obtain the same therapeutic effect like alcoholic preparations.
Way of application
For oral administration in liquid or solid dosage form.
Most oral preparations containing Ivy Leaf Powder Extract, Art. No. 008515, are ethanol-free liquids approved as herbal medicinal products for the cited indications.

Main constituents of Hedera helix L.
Dried leaves of Hedera helix L. contain triterpene saponins (4-5%) [4], with hederasaponin C (hederacoside C), hederasaponin B and hederasaponin D as three main saponins. And small quantities of α-Hederin, a degradation product of Hederacoside C [5].
Other constituents include phytosterols, polyalkynes, essential oil, flavonoids and other phenolic compounds such as caffeoylquinic acids.
The material used for production of the active ingredient complies with the monograph of the Pharmacopée Française and contains not less than 2.5% hederacoside C [2].

Traditional use
Traditional herbalists have used ivy for a wide number of complaints, including bronchitis, whooping cough, arthritis, rheumatism, and dysentery. Decoctions of the herb were applied externally against lice, scabies, and sunburn [6].

Pharmacological properties and mode of action
Ivy leaves have expectorant and antispasmodic activities [1,2,4]. The saponins are the constituents that considerably contribute to the efficacy of the herb.
According to recent study results, the mode of action of ivy leaf is based upon an indirect β2-adrenergic activity of α-Hederin [7]. According to this theory, the substance inhibits the endocytosis of β2-receptors in the lung. Consequently, β2-receptors are hold in the lipid rafts of the cellular membrane and can thus be continuously activated by adrenalin. The numerous response reactions include the production of surfactants in the lung epithelia. Especially Surfactant protein B (SP-B) decreases the surface tension, whereby mucous viscosity is reduced and coughing up facilitated. Also the typical spasmolytic property of ivy can be explained by this theory, because the increased β2-adrenergic receptiveness also leads to an amplified relaxation of smooth bronchial muscles.

Further pharmacological activities of ivy leaves: the saponin fraction and isolated saponins were demonstrated to exhibit antiviral, antibacterial, antimycotic, anti-anthelmintic, anti-inflammatory and cytotoxic effects; additionally antioxidative properties were shown for the saponins α-Hederin and Hederasaponin C [2,6,8].
Clinical studies

Extracts from ivy leaves have well-proven themselves in children and adults applications. Besides pilot studies and application studies, several randomised placebo-controlled double blinded clinical studies for chronic, respectively chronic-obstructive bronchitis as well as bronchial asthma have been conducted [3,9,10,11].

Clinical studies with ivy leaf extracts demonstrate a clear improvement of important lung function parameters, as well as of patients' well-being [9,12,13,14].

In a double blinded, cross-over, randomised clinical trial, a dried ivy extract was investigated in the treatment of bronchial asthma in a group of children over a period of three days. Although the incidence of cough and shortness of breath symptoms did not change during the short trial period, there was a clinically and statistically significant improvement of airflow into the lungs, and of other lung functioning parameters, compared with placebo. The authors suggest that ivy extract may work in a secretolytic and bronchospasmolytic manner [10].

One double blinded human trial found an ivy leaf preparation to be as effective as the conventional secretolytic drug ambroxol for treating the symptoms of chronic bronchitis [9].

Bronchitis and asthma are different diseases, but have something in common: in both conditions the mucous membranes of the respiratory passages produces important quantities of mucus, which impair respiration. When the bronchi get additionally constricted by inflammation, this can even mount up to breathlessness. Scientific studies have shown that an extract from ivy leaf can noticeably alleviate these complaints, without undesired side effects, like those known for some ethical therapeutics. In asthma, ivy can relieve breathlessness and cough attacks when supportively applied.

Undesirable effects

No side effects are known, when applied according to recommendations. However, fresh leaves can elicit severe contact allergic reactions [Hager]. As allergen, the constituent falcarinol has been identified [5,6].

Interactions

None reported [2].

Safety data

In addition to their efficacy, the very good tolerance of ivy leaf preparations is well documented by toxicological studies as well as clinical studies and practice documentation [2,15,16,17,18].
retrospective analysis of treating more than 52,000 children with a cough syrup containing ivy leaf extract showed that undesired side effects occurred only in 0.22 % of cases [19]. Pre-clinical safety data are available for ivy leaf extracts, including in vivo single-dose and repeated-dose toxicity studies, cytotoxicity and mutagenicity for isolated constituents [2].

Conclusion
Ivy leaf and preparations thereof, including Ivy Leaf Powder Extract, Art. No. 0085151, are an expectorant with proven efficacy, safety and tolerance, and are widely used within the scope of rational phytotherapy.

Wädenswil, September 27th 2006/TMO
References