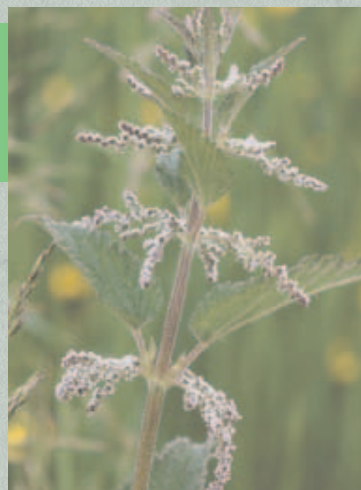


URTICA DIOICA L., *URTICA URENS* L.
(FAM. URTICACEAE) and their hybrids

(STINGING NETTLE (*U. DIOICA*);
SMALL NETTLE (*U. URENS*))

by Lamberto Monti



Urtica dioica

Picture: F. Mearelli

BOTANY: *Urtica dioica* L. and *Urtica urens* L. are plants native to Africa and western Asia which today are common in all the temperate regions of the world; because it is difficult to distinguish between them in the wild state, both species are often picked together.

Urtica dioica L. is a perennial herbaceous plant with straight square green or purplish stems, from 30 to 150 cm tall with creeping roots; the whole plant is covered with stinging hairs. The oblong or oval and finely serrated leaves are on opposite sides of the stem. The imperfect flowers are green, dioecious (the male and female flowers appear in different individuals) and appear in clusters in the axillaries of the upper leaves. The fruit is nut-like.

Urtica urens L. is, on the other hand, an annual herbaceous plant that resembles the *U. dioica* L., but is smaller. The male and female flowers appear together in the same cluster.

DRUG: It is represented by the dried roots and rhizomes of *U. dioica* L. and *U. urens* L.; it appears as a mixture of tapering cylindrical rhizomes, at times ramified and brownish-yellow in colour and irregularly brownish-greyish twisted roots.

CHEMICAL COMPOSITION OF THE DRUG: It contains a considerable number of chemical compounds belonging to different classes: fatty acids, terpenes, lignans, cumarins, triterpenes, ceramides, sterols and lectins.

PHARMACOLOGY: various studies have shown that the hydroalcoholic or aqueous extracts of the drug reduce the binding capacity of dihydrotestosterone with the SHBG (sex hormone binding globulin), a protein considered to be involved in the development of benign prostatic hypertrophy (BPH). A fraction rich in lectins isolated from the roots and fractions of a hydromethanolic extract has inhibited the binding of the epidermal growth factor (EGF) with its receptor in the cells of prostatic tissue. Aqueous and hydroalcoholic extracts and other extracts (butanol, ether, ethyl acetate) have also shown that they can inhibit the enzymes 5α -reductase, with the impediment of the conversion of testosterone into the active form of dihydrotestosterone, and aromatase; the inhibition of the enzyme Na^+/K^+ -ATPase isolated from hyperplastic prostatic cells has also been shown. In some animal models, various extracts of nettle roots have impeded growth of the prostate induced in various ways (testosterone, dihydrotestosterone, implant of urogenital sinus of the prostate gland). One extract has inhibited the activity of leukocyte elastase during the inflammatory response, whilst a polysaccharide fraction isolated from the roots has inhibited the oedema caused by carrageenan in the rat's paw.

TOXICOLOGY: intravenous LD⁵⁰ in the rat of an aqueous extract of nettle roots was calculated at 1721 mg/kg.

CLINICAL STUDIES: Countless clinical studies carried out with various preparations of nettle on patients suffering from benign prostatic hypertrophy (BPH) are described in literature, many of which however are not controlled. The only four placebo-controlled tests have given the following results:

- 1) 1200 mg/die for 6 months of a dry methanolic extract (7-14:1, 20%V/V methanol) significantly decreased the frequency of urination;
- 2) 600 mg/die for 9 weeks of a similar extract increased the flow of urine by 44%;
- 3) 600 mg/die for 4-6 weeks of a similar extract increased by 14% the average flow of urine and decreased the residual post-urination volume by 40-53% ; 6 ml/die (2 x 3 ml) of an aqueous extract of the roots decreased the residual post-urination volume by 19.2 ml (placebo: 10.7 ml), increased the maximum flow of urine by 7.1 ml/s (placebo: 7.1 ml/s) and significantly improved the International Prostate Symptom Score.

Two recent clinical studies investigated the efficacy of an association of a hydroalcoholic extract of nettle root and a lipidosterolic extracts of the fruit of the *Serenoa repens* (W. Bartram) Small (Arecaceae). In both studies, the association was better than the placebo in reducing the symptoms of BPH (the association has recently been registered in Italy as a medical product on prescription).

THERAPEUTIC INDICATIONS: Symptomatic treatment of disorders of the lower urinary tract associated with benign prostatic hypertrophy in stage 1 and 2 according to Alken.

SIDE EFFECTS, CONTRAINDICATIONS, INTERACTIONS, SPECIAL PRECAUTIONS: a total of more than 16,000 BPH patients took part in the clinical studies conduction in order to evaluate the efficacy and safety of the extracts of nettle root. They were given daily doses which on average were more than 756 mg for periods in general of more than 6 months; in all these studies, the rate of side effects was not more than 5% of the patients treated; no serious side effects have been reported; the majority of the side effects reported concern the gastrointestinal system. No interactions with other drugs are known.

PREPARATIONS AND DOSES*: The following preparations and daily doses are recommended: 4-6 g of unrefined drug in infusion; 300-600 mg of dry methanolic extract (7-14:1, 20%V/V methanol); 378-756 mg of dry ethanolic extract (12-16:1, 70%V/V ethanol); 4.5-7.5 ml of fluid ethanolic extract (1:1, ethanol at 45%) or 15 ml of fluid ethanolic extract (1:5, ethanol at 40%). No registered medical products only with preparations of nettle root as their active substance are available in Italy; magistral preparations according to the German Pharmacopoeia can be requested in chemists' (Editor's note).

DURATION OF MEDICATION: No restriction.

* ESCOP monographs (2003 edition).