

# Pharmacology and Therapeutic Use of *Urtica Dioica*

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## The Nettle and Benign Prostatic Hypertrophy

The four stages of the benign prostatic hypertrophy (Vahlensieck, 1985)

1 <sup>st</sup> STAGE	2 <sup>nd</sup> STAGE	3 <sup>rd</sup> STAGE	4 <sup>th</sup> STAGE
Emptying without difficulties Flux > 15 ml/sec No remaining urine Absence of "Trabeculae" in bladder	Discontinuous emptying difficulties Flux > 10-15 ml/sec Absent or rare "Trabeculae"	Permanent emptying troubles Flux < 10 ml/sec Remaining urine > 50 ml Bladder with "Trabeculae"	Permanent emptying troubles Flux < 10 ml/sec Remaining urine > 100 ml Bladder dilatation Urine retention

Well known to everybody, the nettle (*Urtica dioica* L., *Urtica urens* L.) is a traditional medicinal plant, already quoted in medieval herbal treatises due to its employ as a diuretic and remedy against articular affections. During the last fifteen years only, the root of the nettle and its preparations have been employed for the treatment of the benign prostatic hypertrophy or BPH (Nöske, 1994). BPH is the greater urologic trouble of the male: it is found in 90% of males over 65 years and manifests an obstructive and irritative symptomatology.

The enlargement of the periurethral portion of the prostate gland is the anatomic cause which provokes an urethral obstruction and, as a consequence, a difficulty in emptying the bladder. The following table (Vahlensieck, 1985) classifies, in four stages, the relevant symptomatology for diagnostic and therapeutic purpose:

[*Trabecula*: "A general term for a supporting or anchoring strand of connective tissue, as such a strand extending from a capsule into the substance of the enclosed organ" (*Dorland's Illustrated Medical Dictionary*, W. B. SAUNDERS)]

### Pharmacological Researches

All pharmacologic researches, and also some clinical trials effected with the nettle, employed aqueous or hydroalcoholic preparations with relatively hydrophile solvents, ie methanol or ethanol in 20-60% concentrations.

These extracts are constituted by phytosterols (Schilcher, 1986), triterpenic acids, lig-

nanes and phenylpropanes (Wichtl, 1987), polysaccharides (Wagner, 1994) in a prevailing degree.

In a series of experimental pharmacological trials (see Koch's review, 1995) such extracts of nettle root pointed out an inhibitory activity on prostatic aromatase, on 5- $\alpha$ -reductase, interactions with the globulin bound with sexual hormones (Sex hormone-binding globulin or SHBG) (Schmidt K., 1983; Hryb et al., 1995).

A lightly antiphlogistic activity of an aqueous extract of nettle root, could be demonstrated in the test of the oedema of rat's paw: this effect was attributed, by the Authors, to a fraction of acidic polysaccharides (Wagner et al., 1994).

## Clinical Trials

The examination of the therapeutic activity has been described, besides 8 open studies, in 4 double-blind vs. placebo studies (Vontobel et al., 1985; Dathe and Schmidt, 1987; Fischer and Wilbert, 1992; Engelmann et al., 1996). The four studies were effected by employing a hydromethanolic extract of the root (20% w/v, ratio drug/extract 10:1).

Vontobel et al. (1985) experimented a daily dose of 600 mg of extract in 50 patients suffering from BPH (25 volunteers treated with the extract and 25 volunteers with placebo) during 9 weeks.

In comparison with placebo patients, a statistically significant decrease of the plasmatic concentration of the sex hormone-binding globulin and a significant increase of the micturition volume (44%) and of the maximal urinary flux volume (9%) were verified.

Dathe and Schmidt (1987) carried out a double-blind study with 79 patients suffering from BPH (without specifying the pathologic stage) for a period from 4 to 6 weeks.

The patients were treated with the same preparation and dosage (600 mg of extract/day) used by Vontobel et al.

The check parameter was the flowmetry which, during the treatment, increased significantly, in comparison with placebo, of 2 ml/sec (14%).

Fischer and Wilbert (1992)

experimented with 40 patients suffering from BPH.

After a placebo-therapy, which lasted 4 weeks, a randomization was effected and a group was treated with a daily dose of 1200 mg of extract during 24 weeks.

The activity was valued on the basis of Boyarski's symptomatology score (1977) besides clinical analysis including also the determination of the hormone-binding globulin (SHBG). According to Boyarski's score, significant improvements were emphasized starting from the fourth week of treatment; furthermore, it could be verified a significant decrease of the plasmatic concentration of SHBG.

In the study of Engelmann et al. (1996) 41 patients suffering from BPH were treated with a fluid extract of nettle root.

The daily dose corresponded to 5-6 g of root and the treatment lasted 12 weeks.

As principal check parameters they adopted the International Prostatasymptomes Score (IPSS) as well as the score for the evaluation of the way of life, of the maximal urinary flux value and of the volume of residual urine.

The score IPSS decreased of 9.5 units in the treated volunteers, passing from 18.2 to 8.7, and in the placebo volunteers a statistically significant decrease of 4.7 units only was pointed out ( $p < 0.002$ ).

As to life quality, volume of residual urine and maximal urinary flux value there was a ten-

dency to improvement in the treated patients which did not result statistically significant.

## Side Effects

The good tolerability of the extract of nettle root was demonstrated by an observational study in 4087 patients suffering from BPH, treated with 600-1200 mg/day of extract during six months. Undesired effects were pointed out in 35 patients only; among them 33 complained gastroenteric troubles (0.65%), 9 skin allergies (0.19%) and 2 hyperhidrosis (Sonnenschein, 1987).

The revision of the monograph on nettle root published by Commission E in January 1991 asserts that the drug is indicated "in case of micturition difficulties associated with a prostatic adenoma - 1<sup>st</sup> or 2<sup>nd</sup> stage" (Vahlensieck's classification) and advises a daily dosage of 4-6 g of drug, without any contraindications.

The monograph mentions occasional light gastroenteric troubles as possible side effects.

## The Decoction

Soak very well 4-6 g of ground nettle root (average daily dose) in 300-400 ml of cold water. Bring to the boil and let boil for two minutes.

Take the kettle away from heating and let it at rest, covered, for 10-15 minutes. Filter, drink during the day. One table spoon of ground root contains abt. 3 grammes of drug.

## Potential Activity Against Male Alopecia

In 1998 Shapiro and van Neste reported the results, obtained with finasteride (an azandrostene derivative) of two two-year clinical trials effected on 1553 males suffering from a moderate baldness: the falling out of hair stopped in 83% of cases.

Since the mechanism of action of finasteride is based on a 5 $\alpha$ -reductase blockade, as in the case of the action's mechanism of nettle root (Koch, 1995), it could be hypothesized, without having received a confirmation till now, that equal benefits can result from the prolonged use of the drug.

## Bibliography

Boyarski S. (1977) "Guidelines for investigation of benign prostatic hypertrophy" Trans. Am. Assoc. Gen. Urin. Surg. 68: 29-32  
Dathe G., Schmidt H. (1987) "Phytotherapie der benignen Prostatahyperplasie (BPH). Doppelblindstudie mit Extractum Radicis Urticae (ERU)" Urologe [B] 27: 223-226  
Engelmann U., Boss G., Kreis H. (1996) "Therapie der benignen Prostatahyperplasie mit Bazoton liquidum" Urologe [B] 36: 287-291.  
Fischer M., Wilbert D. (1992) "Wirkprüfung eines Phytopharmakons zur Behandlung der benignen Prostatahyperplasie (BPH). In: Rutishauser G. (ed.) "Benigne Prostatahyperplasie

III / 3e. Klinisch-Experimentelle Konferenz zu Fragen der benignen Prostatahyperplasie".

W. Zuckschwerdt Verlag: 79-84.  
Hryb D.J., Khan M.S., Romas N.A., Rosner W. (1995) "The effect of extracts of the roots of the stinging nettle (*Urtica dioica*) in the interaction of SHBG with its receptor on human prostatic membranes" *Planta Medica* 61: 31-32

Koch E. (1995) "Pharmakologie und Wirkmechanismen von Extrakten aus Sabalfrüchten (*Sabal fructus*), Brennesselwurzeln (*Urtica radix*) und Kürbissamen (*Cucurbitae peponis semen*) bei der Behandlung der benignen Prostatahyperplasie" in Loew D., Rietbrock N. (eds.) "Phytopharmaka in Forschung und klinischer Anwendung", Steinkopff Verlag, Darmstadt.: 57-79

Konrad L., Hans-Helge Müller et al. (2000) "Antiproliferative effect on human prostate cancer cells by a stinging nettle root (*Urtica dioica*) extract" *Planta Medica* 66: 44 - 47

Lichius J.J. e Muth C. (1997), *Planta Medica* 63: 307 - 310.

Nöske H.D. (1994) "Die Effektivität pflanzlicher Prostatamittel am Beispiel von Brennesselwurzelextrakt" *Ärzte Z. Naturheilverfahren* 35(1): 18-27.

Rückle E. (1950) "Informationen aus der Medizin für naturgemäße Lebens - una Heilweise, Wissenschaft und Praxis" *Hippokrates* 21: 55 - 56

Shapiro J. e Van Neste D. (1998), *Simposio annesso al Congresso "Clinical Dermatology 2000"* organizzato da MSD Sharp & Dome a Singapore il 18 giugno 1998 [cfr. Deutsche Apoth. Ztg.

138 (1998) 3216 e 139 (1999) 2396].

Schilcher H. e Effenberger S. (1986) "Zur Standardisierung von Brennesselwurzel" *D.A.Z.* 126: 79-81

Schmidt K. (1983) "Die Wirkung eines Radix Urticae-Extrakts und einzelner Nebenextrakte auf das SHBG des Blutplasmas bei der benignen Prostatahyperplasie" *Fortsch. Med.* 101: 713-716.

Sonnenschein R. (1987) "Untersuchung der Wirksamkeit eines prostatotropen Phytotherapeutikums (*Urtica plus*) bei benigner Prostatahyperplasie und Prostatitis - Eine prospektive multizentrische Studie" *Urologe [B]* 27: 232-237.

Vahlensiek W. (1985) "Konservative Behandlung der benignen Prostatahyperplasie (BPH)". *Therapiewoche* 35: 4031-4040

Vontobel H.P., Herzog R., Rutishauser G., Kres H. (1985) "Ergebnisse einer Doppelblindstudie über die Wirksamkeit von ERU-Kapseln in der konservativen Behandlung der benignen Prostatahyperplasie" *Urologe [A]* 24: 49-51.

Wicht M. e Chaurasia N. (1986) "Phenylpropane und Lignane aus der Wurzel von *Urtica dioica* L." *D.A.Z.* 126: 1559-1963

Wagner H., Willer F., Samtleben R., Boos G. (1994) "Search for the antiprostatic principle of stinging nettle (*Urtica dioica*) roots" *Phytomedicine* 1: 213-224.