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On The
COVER

Saw Palmetto...
Reborn



Supercritical fluid extraction delivers a purer, more effective extract of the classic herb for BPH

Supercritical fluid extraction is a nontoxic state-of-the-art technology originally commercialized for the food, fragrance, and environmental industries. It is prized for extraction of volatile compounds since it preserves the light aromatic notes and nuances of smell and taste far better than steam distillation or solvent extraction. In addition, it is environmentally friendly and produces an extract of extraordinary purity while leaving behind no solvent residues on the product. The world's largest supercritical fluid extraction plant is probably the one operated by Maxwell House Coffee Company in Houston for decaffeinating coffee beans.

The process uses carbon dioxide (CO₂) in its "supercritical fluid" state, when it is neither liquid nor gas. Supercritical fluids defy common sense, behaving like a liquid and a gas simultaneously. When CO₂ is brought above its critical temperature of 31° C (88° F) and its critical pressure of 72 atmospheres, it becomes dense like a liquid while flowing freely like a gas.

Supercritical CO₂ is an excellent solvent for many substances, but the beauty of this process is that the solvent properties of supercritical CO₂ can be tuned over a wide range to provide an optimal extraction. This is done by finding the exact combination of temperature and pressure in the extraction chamber to yield an extract with the desired profile. When extraction is complete, the pressure is released and the solvent returns to its gaseous state.

The first medicinal herb to benefit from large-scale supercritical fluid extraction is saw palmetto. Clinical and experimental studies of supercritical fluid extracts of saw palmetto demonstrate some remarkable advantages.

Since saw palmetto is thought to interfere with testosterone-induced growth of the prostate, researchers tested the effect of saw palmetto extracts on prostate weight in castrated rats given testosterone. The rats were divided into control and treatment groups and given placebo, testosterone, or testosterone plus saw palmetto extract for ten days. Then the rats were sacrificed and their prostate glands were weighed.

In the control groups, normal rats had an average prostate weight of 20.6 mg at the end of the experiment, while castrated rats given testosterone had nearly normal prostate weights averaging 17.4 mg. Castrated rats given placebo instead of testosterone had an average prostate weight of 3.0 mg.

When a conventional hexane extract of saw palmetto was given to castrated rats along with testosterone, average prostate weight was reduced to 11.7 mg. However, when a supercritical fluid extract of saw palmetto was given (in the same dosage as the conventional extract) along with testosterone, average prostate weight dropped to 6.5 mg. Furthermore, the supercritical fluid extract given at half dosage reduced average prostate weight as effectively (to 11.9 mg) as the hexane extract at full dosage.

These data were presented in a review article on saw palmetto in the European journal *Fitoterapia*, one of the oldest and best European botanical medicine journals, with an international roster of contributors in each issue.

Saw palmetto is thought to work primarily by inhibiting an enzyme called 5-alpha-reductase. This enzyme converts testosterone to an active form called DHT (dihydrotestosterone) that stimulates growth in prostatic tissue. A study published in a German urology journal tested the ability of the supercritical fluid extract of saw palmetto to inhibit this enzyme. The researchers concluded that the extract is a strong inhibitor of 5-alpha-reductase [IC₅₀=25.0 µg/ml].

Comparison of saw palmetto supercritical fluid extract taken once or twice daily	
	160mg twice a day 320mg once a day
Decrease in symptom score (IPSS)	59.5% 61.2%

Increase in maximum urinary flow	23.8%	21.4%
Increase in average urinary flow	21.3%	12.5%
Decrease in residual urine	6.2%	24.8%
Decrease in prostate volume	9.7%	14.7%
Rated successful by patient	75.0%	86.0%
Rated successful by physician	75.0%	88.0%

Saw palmetto also exerts an anti-inflammatory effect on prostate tissue. Research published in a German pharmaceutical journal demonstrates that the supercritical fluid extract of saw palmetto strongly inhibits the proinflammatory arachidonic acid cascade. They showed that the extract provides dual inhibition of the cyclooxygenase pathway [IC50=28.1 µg/ml] and the 5-lipoxygenase pathway [IC50=18.0 µg/ml].

A large observational study in Germany followed 2,000 BPH patients given a standard dosage of the supercritical fluid extract (160 mg capsules twice a day) for 3-6 months. Three-fourths of the patients had stage II BPH, while the remainder had stage III disease. The main variable studied, residual urine, declined on average from 80 ml to 45 ml. Patients without severe symptoms of dysuria (painful or difficult urination) increased from 24.9% to 62.5%. 88% of patients subjectively evaluated the treatment as very good or good. 2-4% of patients reported side effects, mostly mild gastrointestinal disturbances.

A well designed clinical trial in Belgium compared two dose schedules for the supercritical fluid extract, the standard twice a day schedule and a new once a day schedule. Eighty four BPH patients with maximum urine flow between 5 and 15 ml/sec. participated with 67 patients completing the one year study. Patients were randomly assigned to a group given the standard 160 mg capsule twice a day, or to a group given one 320 mg capsule in the morning and a placebo capsule in the evening.

The study found the two dose schedules to be equally safe and effective overall. In both groups, symptom scores on the IPSS scale (International Prostate Symptom Score) dropped by about 60%, and maximum urinary flow rate increased by about 22%. Table 1 presents the results in detail.

Eight patients in each group reported adverse effects; in three quarters of these cases the physician judged the complaint to be a consequence of BPH itself rather than of the medication. Two patients in each group withdrew from the study due to side effects. The medication was well tolerated by the remaining patients.

The new supercritical fluid extract of saw palmetto in one-a-day capsules gives men an equally convenient alternative to the drug finasteride (Proscar). Finasteride, the standard drug for BPH, is normally taken once a day. Finasteride causes diminished libido and sexual dysfunctions in some patients; in particular, about 3-4% of patients experience impotence. By contrast, saw palmetto is very well tolerated and inexpensive.

The Prostate Disease Epidemic

After age 60, the number of men who suffer urinary difficulties caused by prostate enlargement may exceed 70%. Autopsy studies show that 40% of men in their 50's are afflicted with benign prostate enlargement.

Those afflicted with benign prostate disease have trouble urinating and voiding, especially at night. Aged men are often forced to get up several times a night to urinate and still do not feel they have completely emptied their bladders. The relentless frustration of chronic urinary urgency is a major cause of sleep disturbance and loss of quality of life.

One proven method of avoiding prostate disease is surgical castration at the age of 40. By removing most of the testosterone production from the body, the prostate gland does not enlarge and the risk of prostate cancer would be reduced. Another way to mitigate age-related prostate enlargement is to modulate testosterone metabolism by preventing it from converting to estrogens and dihydrotestosterone(DHT). Pharmaceutical extracts from the saw palmetto berry, pygeum africanum, and stinging nettle are proven to alleviate the miseries of benign prostate enlargement. These herbal extracts may be more effective in preventing, rather than treating this epidemic disease.

For men with early stage prostate cancer, The Life Extension Foundation's hormonal modulation protocol has proven to work in virtually every single case. To review this clinically successful protocol, refer to the Prostate Protocol (Early Stage) or Prostate Protocol (METASTASIZED/LATE STAGE) on the Foundation website or the Disease Prevention and Treatment Protocol book.

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