



CELERY SEED EXTRACT

Exciting help for high blood pressure, gout and rheumatism

Celery is a member of the Umbelliferous family along with carrots, parsley, and fennel. The modern celery originated from wild celery native to the Mediterranean where its seeds were once highly valued as a medicine. Like many other folk medicines, modern research is upholding the medicinal value of this common plant. In particular, scientists are evaluating a compound known as 3-n-butylphthalide or 3nB for short – the most powerful healing factor found in celery.

WHAT IS 3NB

3nB is a compound unique to celery and is responsible for its characteristic flavour and odour. Research into the medicinal effects of celery led to the discovery of 3nB – an active component of celery with potential to lower blood pressure and offer relief of arthritis symptoms. 3nB first drew significant scientific attention when researchers at the University of Chicago Medical Center identified it as the factor responsible for lowering blood pressure (Le, *et al*). The research was prompted by one researcher's father, who, after eating a quarter-pound of celery every day for one week, observed that his blood pressure dropped from 158 over 96 to a normal reading of 118 over 82. Subsequent studies on animals showed that a small amount of 3nB lowered blood pressure by 12%–14%, as well as lowered cholesterol levels by about 7%.

HOW DOES 3NB LOWER BLOOD PRESSURE

3nB's ability to lower blood pressure appears to be a result of several factors. Blood pressure refers to the force with which blood flows through the vessels. Retention of excess fluids and poor flexibility of blood vessels can cause higher blood pressure. Some causes are sodium (salt) retention and/or inadequate potassium, leading to increased fluid volume in the blood. Hardening of the arteries and hormones released during stress can also lead to the loss of flexibility or constriction of blood flow. An illustration of this concept can be seen with a garden hose. If one were to put their thumb over the garden hose, the pressure against your thumb and the resulting water pressure out of the hose can be minimized by either turning down the faucet (reducing the fluid volume) or by letting more water flow out the end of the hose (dilating the vessel). In treating high blood pressure, doctors usually prescribe diuretics (water pills) to reduce the fluid volume, and vasodilators to relax the arteries. This reduces the resistance of blood flow or beta-blockers by turning down the pumping action of the heart. 3nB appears to help lower blood pressure by both acting as a diuretic and vasodilator through impacting the production of prostaglandins. It acts in a similar manner as calcium-channel blockers (Tsi, *et al*): drugs that inhibit the flow of calcium ions across the membranes of smooth muscle cells. By reducing calcium flow, muscle tone is relaxed and the risk of artery muscle spasms is diminished. Note: They do not block bone absorption of calcium. 3nB has also been shown to lower blood cholesterol levels and reduce the forma-

tion of arterial plaque in experimental studies (animal and test tube studies) (Le, *et al*, Mimura, *et al*). This may increase the elasticity of the blood vessels and also lead to lower blood pressure readings. In addition, 3nB appears to affect areas and systems of the brain that control vascular resistance.

The benefit of using celery seed extract to lower blood pressure is its apparent safety and unusual mechanism of acting as a diuretic. Most other diuretics have the dangerous side effect of changing the ratio of sodium to potassium in the blood resulting in too much of one over the other. In contrast, celery seed extract acts as a diuretic but without altering the ratio of sodium to potassium in the blood.

Although research on celery and celery seed extract's blood pressure lowering effect is still quite preliminary, it is certainly worth the effort as some people have noted significant reductions. What research will probably show is that some people with high blood pressure will respond to celery extract while others will not. This occurrence is not unusual. Physicians treating high blood pressure will admit a similar phenomenon with the use of conventional drugs.

Another real advantage to using celery seed extract is that it does not lower blood flow to the brain like other conventional high blood pressure drugs do. While lowering blood flow can be helpful at reducing the likelihood of stroke, it often leaves people taking these drugs feeling tired, depressed, dizzy and forgetful. Celery seed extract on the other hand has actually been shown to not only help prevent strokes in studies done on animals, but also improve blood flow, protect the brain, and enhance energy production in a similar manner to ginkgo biloba extract (Yu, *et al*, Chong, *et al*, Chong, *et al*, Yan, *et al*). It has produced dramatic recovery for animals in neurological and brain function studies that simulate a stroke (Chong, *et al*, Chong, *et al*, Yan, *et al*, Lin, *et al*, Liu, *et al*). It has also been shown to significantly increase lifespan in animal studies (Zhang, *et al*).

HOW MUCH CELERY OR CELERY EXTRACT SHOULD I TAKE FOR HIGH BLOOD PRESSURE

The recommendation is to either consume 8 ribs of celery per day or take a celery seed extract 75 mg capsule standardized to contain 85% 3nB and other celery phthalides at a dosage of 75 to 150 mg twice daily.

THE PAIN OF GOUT, ARTHRITIS AND FIBROMYALGIA

3nB has shown tremendous promise as an anticancer phytonutrient and detoxification aid in an experimental animal model (Zheng, *et al*). However, it is its use as a pain reliever for arthritis, fibromyalgia and gout that is getting most of the attention.

A celery seed extract standardized to contain 85% 3nB and other celery phthalides has been evaluated in the treatment of "rheumatism"—the general term used for arthritic and muscular aches and pain (Soundarajan, *et al*, Venkat, *et al*). In these studies efficacy was evaluated by well-established clinical protocols used to measure the effectiveness of conventional arthritis and muscular pain drugs. This protocol allows objective measures of clinical pain that can be assessed statistically and for individual comparisons. Due to the chronic, fluctuating nature of rheumatism, the design of the study was a longitudinal one. This sort of study compares the results achieved when the active substance is used to the time when it is not.

During the active phase of the 12-week study, the 15 subjects suffering from either osteoarthritis, osteoporosis or gout received 34 mg of a proprietary celery extract standardized to contain 85% phthalides twice daily. For these subjects, the pain had been present approximately 10 years in a remittent or continual form, leading to a pain and lack of joint mobility preventing the subjects from carrying out household duties, hobbies and employment activities. The results of the study were extremely positive and statistically significant. The chance that this positive pain reducing effect in these subjects was merely a placebo effect is less than 1 in 1,000. Subjects experienced significant pain relief after 3 weeks of use with the average reduction in pain scores of 68%. In some instances, subjects experienced 100% pain relief. Most subjects achieved maximum benefit after six weeks of use, although some noticed improvements with extended usage of the extract. Detailed blood chemistry as well as clinical evaluation in these test subjects did not turn up any side effects. Many subjects noticed a diuretic effect, but no changes were noted in the sodium and potassium balance. The significance of this effect was discussed above.

Based on the positive results in this small pilot study, a larger 70 patient study was conducted. Test subjects received 75 mg of the celery extract twice daily for three weeks. At this higher dosage, subjects reported even better results than in the pilot study. Statistically and clinically significant reductions were noted in pain scores, mobility and quality of life. Again no side effects were noted other than the diuretic effect with no changes in the sodium and potassium balance. 3nB

appears to be particularly helpful for sufferers of gout as it lowers the production of uric acid by inhibiting the enzyme xanthine oxidase.

DOSAGE AND SAFETY

Over 100,000 people in Australia have used this proprietary celery seed extract 75 mg capsule, standardized at 85% phthalides, without any reports of side effects. The current recommendations for joint and muscle complaints based on the information available from trials and clinical experience are the following (based upon using a celery seed extract standardized to contain 85% 3nB and other phthalides):

- For relief from joint and muscle pain (including pain due to osteoarthritis, rheumatoid arthritis, and fibromyalgia): 1 capsule, 2 times daily.
- For gout: 2 capsules, twice daily.

NOTE: The initial blood uric acid measurements may increase in people with gout as uric acid crystals begin to dissolve.

DO YOU HAVE TO TAKE CELERY SEED EXTRACT CONTINUOUSLY TO MAINTAIN RELIEF FROM JOINT & MUSCLE PAIN

Yes. Results from studies conducted to date indicate that as long as celery seed extract is used it, alleviates pain. However, if it is stopped the pain tends to recur.

HOW DOES 3NB WORK TO PRODUCE ALL OF THESE BENEFITS

Based upon all of the existing research it is clear that 3nB exerts a profound effect on many of the body's control systems, chiefly the prostaglandin system. Prostaglandins are chemicals that mediate or control many important body processes including: regulating inflammation, pain, swelling; blood pressure; and heart, digestive and kidney function as well. Some of the effects noted for 3nB on the prostaglandin system are quite unique and novel. Rather than simply inhibiting the production of prostaglandins by blocking enzymes that produce them like aspirin or even the more expensive and selective Cox-2 inhibitors, 3nB appears to help restore balance in the prostaglandin system. Exactly how it accomplishes this effect is still unknown. Drug companies are researching the unique effects of 3nB in order to develop drugs that can be patented and sold for a huge profit. However, it doesn't look like that line of research is necessary.

CAN I TAKE CELERY SEED EXTRACT WITH CONVENTIONAL ANTI-INFLAMMATORY DRUGS?

Yes. There does not seem to be any adverse interactions with conventional drugs.

CONTRAINDICATIONS

Since the effects of celery seed extract have not been evaluated for safety in pregnancy, it is generally recommended that it not be used during pregnancy or lactation. No other contraindications are presently known. As a precaution, individuals taking the drug Coumadin® (warfarin) should be monitored by their health care practitioner when using celery seed extract.

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