



# DR. AUBURN'S ADVANCED NUTRITIONALS

# STRONTIUM

## CLINICAL APPLICATIONS

- Provides Musculoskeletal Support
- Provides All-Natural Bone Support
- Increases Skeletal Strength and Helps Maintain Bone Density

## What is Strontium?

Strontium is a mineral that is similar physical and chemical properties to calcium. Research has shown strontium provides all-natural bone support through its ability to naturally increase the formation of osteoblasts (cells that build up bone) and slow down the formation of osteoclasts (cells that break down bone tissue) helping to maintain healthy bone density. As a result, strontium imparts a balancing effect on the osteoblastic-osteoclastic ratio and boosts skeletal strength via two different mechanisms. Strontium's ability to strengthen both the bone matrix and skeletal density makes it an important part of any bone building regimen.

## Overview

Bone is the rigid structure that makes up our skeleton, but is actually an active, living organ that is constantly being built up and broken down by osteoblasts and osteoclasts. The proper balance of this cycle and turnover of bone provides the foundation for strong bones over a lifetime. The strength of bone tissue is closely related to bone density and many individuals are concerned about bone health because bone density naturally declines with age. Bone density can also be disturbed by genetic and hormonal factors as well as negative lifestyle influences such as poor diet, lack of exercise and sleep. By boosting the replication and maturation of osteoblasts and inhibiting osteoclasts, strontium provides key support for maintaining skeletal health and bone density.

## Bone and Skeletal Health<sup>†</sup>

A growing body of research highlights the benefits of strontium in skeletal health. In the well-known PREVOS Trial, post-menopausal women were randomized to receive placebo or strontium ranelate (SR) at doses of 125 mg/day, 500 mg/day or 1 g/day for two years; all participants received 500 mg calcium per day. The study found that after two years, 1 g/day of SR significantly increased the osteoclast to osteoblast ratio

in the lumbar region, compared with placebo.<sup>1</sup> In addition, a significant increase in bone alkaline phosphatase (a marker of increased bone health) was seen at all-time points compared with baseline, and a significant increase was seen at month 18. These results differ from the STRATOS trial which found that 2 g per day were needed to affect vertebral bone mineral turnover (BMD) in the same population.<sup>2</sup> Kaufman et al (2013) found similar effects of strontium in a population of men; those who received strontium over two years experienced improved osteoblast activity in the lumbar spine than those who received a placebo. Significant between-group differences were seen in their femoral necks and hips, and mean levels of both a key bone resorption marker and alkaline phosphatase were increased in both groups.<sup>3</sup> SR has also been found to significantly support hip cortical thickness in post-menopausal women over a five-year span, compared to placebo<sup>4</sup>; use of SR has also been associated with positive osteoblastic-osteoclastic ratio balance with sustained increases over a period of 10 years.<sup>5</sup>

One of the key studies on strontium was a 2004 study published in the NEJM which randomized 1649 post-menopausal women (with previous osteoporotic fracture) to placebo or 2 g per day of SR. Calcium and vitamin D supplements were given to bring each individual up to approximately 1,500 mg and 800 IU respectively. The researchers found that the SR group had improved markers of bone integrity within the first year (41% less bone challenges in three years) compared with placebo group and that the SR group had improved bone performance and osteoblastic/osteoclastic balance, specifically at the lumbar spine and femoral neck. Furthermore, at the third month of therapy, the serum concentration of bone-specific alkaline phosphatase was higher in the strontium ranelate group than in the placebo group.<sup>6</sup> A 2013 review of strontium ranelate's long-term efficacy and safety in postmenopausal women concluded that strontium's capability in safely improving the bone matrix results in skeletal strength, as demonstrated in the long-term trials SOTI and TROPOS at five years.<sup>7</sup>

## Musculoskeletal Support†

Emerging research also supports the use of strontium for musculoskeletal health and maintaining normal inflammatory balance.<sup>8</sup> The high-dose SR treatment has been shown to support cartilage and bone health.<sup>9</sup> In addition, a double-blind, randomized, placebo-controlled study of SR that evaluated 1,371 patients, found SR helped maintain knee health, improve joint function and reduce discomfort scores.<sup>10</sup>

## Directions

1 capsule two times per day or as recommended by your health care professional. For maximum absorption, do not consume with calcium supplements.

## Does Not Contain

Gluten, corn, yeast, artificial colors and flavors.

## Cautions

If you are pregnant or nursing, consult your physician before taking this product.

Supplement Facts <sup>v1</sup>		
Serving Size 1 Capsule		
Servings Per Container 60		
1 capsule contains	Amount Per Serving	% Daily Value
Strontium Citrate	950 mg	*
Strontium (as Strontium Citrate)	300 mg	*
* Daily Value not established		

## References

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