



EFFECTS OF CATAPLEX[®] D, CALCIFOOD[®], & OSTROPHIN PMG[®] ON MARKERS OF BONE LOSS AND BONE FORMATION

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Bone mass decreases with age and failure to maintain bone mass may lead to painful bone conditions like osteoporosis and bone fractures. Thirty-four million Americans are currently at risk for osteoporosis, a disease that researchers agree is largely preventable with healthy nutrition and lifestyle (Hampton, 2004).

It is well-established that intake of both calcium and vitamin D are effective in supporting bone health (Boonen *et al.*, 2006).

The aim of this study was to measure the effects of three Standard Process whole food supplements—Cataplex® D, Calcifood®, and Ostrophin PMG®—on changes in bone metabolism of elderly subjects with osteopenia (decreased bone density).

Background

The risk of osteoporosis increases with age and it is likely that in a population expecting increased longevity, reported cases of osteoporosis will rise. In fact, it is estimated that in less than 15 years, 61 million Americans age 50 and older will have bone disease (National Osteoporosis Foundation, 1999). Currently, osteoporosis is responsible for more than 1.5 million fractures in the U.S. each year totaling \$18 billion in health care costs (National Osteoporosis Foundation, 2007). The disease affects more women (80%) than men (20%), and postmenopausal women are particularly at risk (see Table 1 for risk factors).

The cycle of bone resorption and formation occurs continuously and is affected by nutrition, hormones, and vitamin D status (Heaney, 1999). After age 30, bone mass begins to decrease and if resorption begins to outpace formation, osteoporosis will likely follow. The disease has no cure and while bone loss can be treated pharmacologically, this approach generally focuses on minimizing bone resorption rather than building bone mass. Researchers are looking for a safe and effective means of maintaining bone density (Mundy, 2006). Currently, the most effective way to combat osteoporosis is through prevention (see Table 2). The Institute of Medicine's Dietary Reference Intakes recommend 1200 mg of calcium and 400 IUs of vitamin D per day for persons over age 50. Note that the 2005 U.S. Dietary Guidelines for Americans now recommend an increased intake of vitamin D of 1000 IUs for at-risk populations—older adults, people with dark skin, and people exposed to insufficient UVB light.

Table 1. Osteoporosis Risk Factors

- **Age.** Your risk of osteoporosis increases as you age.
- **Gender.** Females are at greater risk of developing osteoporosis.
- **Family and personal history of fractures as an adult.**
- **Race.** Women who are Caucasian or Asian are more likely to develop osteoporosis.
- **Bone structure and body weight.** Small-boned and thin women are at greater risk.
- **Menopause.** Postmenopausal women have an increased risk of developing osteoporosis.
- **Lifestyle.** Smoking and excessive alcohol intake increases risk, as does a diet with inadequate calcium. Little or no weight-bearing exercise also increases risk of developing osteoporosis.
- **Medications/Chronic diseases.** Certain medications used to treat rheumatoid arthritis, endocrine disorders, seizure disorders, and gastrointestinal diseases may have side effects that can damage bone.

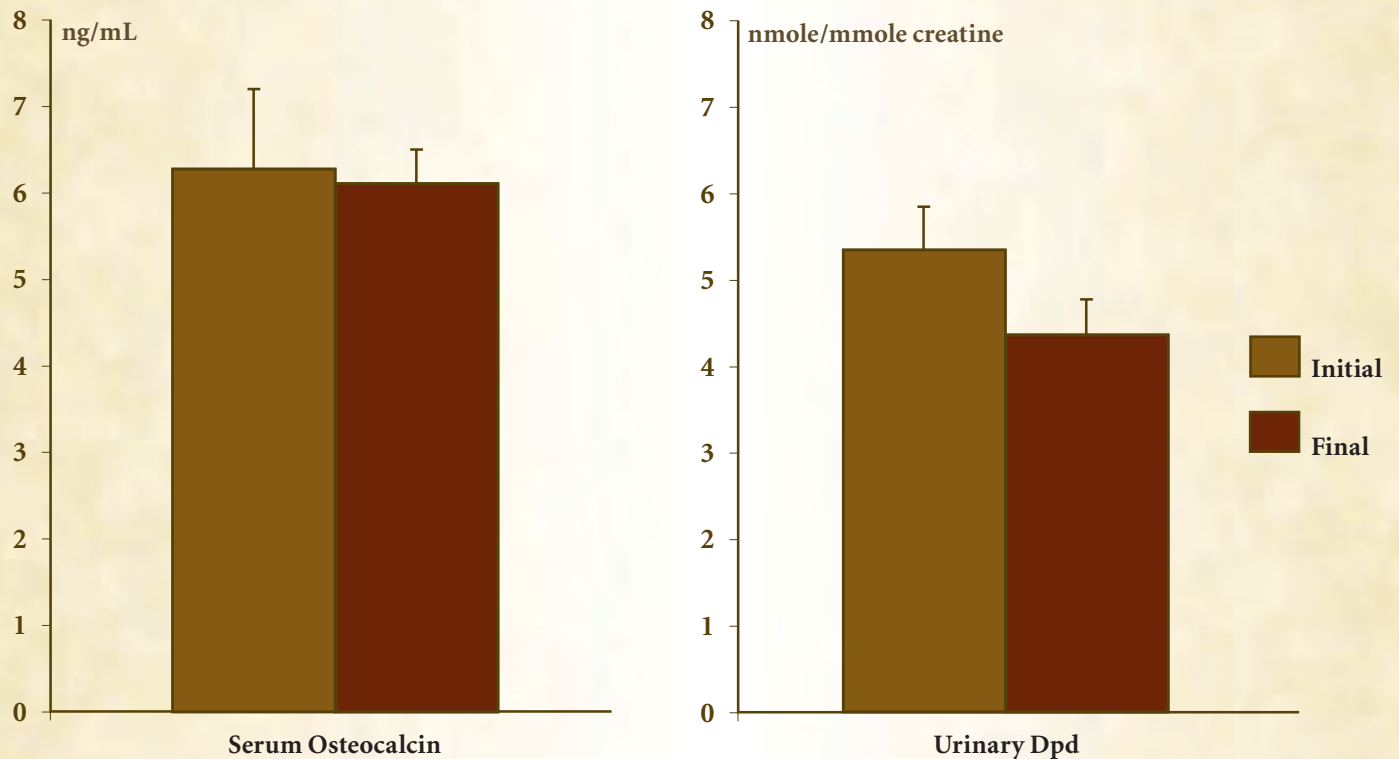
Adapted from the National Osteoporosis Foundation
www.nof.org/prevention/risk.htm (2007)

Table 2. Steps to Prevent Osteoporosis

- A balanced diet rich in calcium and vitamin D.
- Weight-bearing and resistance-training exercises.
- A healthy lifestyle with no smoking or excessive alcohol intake .
- Talking to one's health care professional about bone health.
- Bone density testing and medication when appropriate.

Adapted from the National Osteoporosis Foundation
www.nof.org/prevention/risk.htm (2007)

Changes in Measures of Bone Metabolism



Methods

Measures of deoxy pyridinoline (Dpd) and osteocalcin were taken from 11 elderly subjects with osteopenia. Subjects supplemented their diets with Cataplex[®] D (1 tablet), Calcifood[®] (6 wafers), and Ostrophin PMG[®] (1 tablet) each day for three months. Osteocalcin and Dpd levels were measured on day 1 and again at 3 months.

Circulating Dpd is a marker of bone resorption whose chemical structure forms in collagen and provides strength to the collagen matrix of bone. Dpd can be measured in the urine to assess relative rates of bone loss. Osteocalcin is a protein found in bone that is thought to facilitate bone formation. Higher circulating levels of osteocalcin are correlated with increases in bone mineral density (Ross & Knowlton, 1998). This measure is often used to identify women at risk of developing osteoporosis by monitoring bone metabolism during perimenopause and postmenopause and during antiresorptive therapy.

Findings

Osteocalcin was unchanged during the 3-month supplementation while urinary Dpd secretion decreased 18% (see figure). Decreased Dpd suggests that less bone was lost over the three months. No change in osteocalcin further suggests a positive environment for bone formation.

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L4903 08/07