Effects of Cataplex® D, Calcifood®, and Ostrophin PMG® on Markers of Bone Loss and Bone Formation

Effects of Cataplex D, Calcifood, and Ostrophin PMG® on Markers of Bone Loss and Bone Formation

Retrospective case series

Three months

11 subjects: 53-79 years of age, average age of 61

> Maintenance of serum osteocalcin, a marker associated with increase in bone mineral density
>
> Decrease urinary deoxypyridinoline (DPD), a marker associated with potential bone loss

In this retrospective study, markers of bone health were reviewed for 11 subjects with osteopenia (decreased bone density) who had been taking a protocol of three Standard Process supplements.

Protocol
Cataplex D | 1 tablet
Calcifood | 6 wafers
Ostrophin PMG® | 2 tablets

In addition to the proprietary Protomorphogen veal-bone extract, this protocol contains a unique blend of:

Vitamins and Minerals
Vitamin A
Vitamin D
Calcium
Magnesium

**Whole Food Ingredients**
Wheat germ
Veal and bovine bone
Date
Carrot
Rice bran

To measure effect on bone mineral density, two markers associated with bone status, **osteocalcin** and **DPD**, were assessed by means of an initial sample and a final sample after three months of supplementation.

Produced by specialized cells, osteocalcin is a protein that helps build teeth and bone. Higher circulating levels of osteocalcin are correlated with increases in bone mineral density.

Circulating DPD is a marker of bone resorption, when bone is broken down by **osteoclasts**. The opportunity for bone loss arises if osteoclast action outpaces the deposit of **new bone**. Found within collagen, DPD provides strength to the collagen matrix. When collagen is broken down, the residue enters the bloodstream and is eliminated via urine.[1]
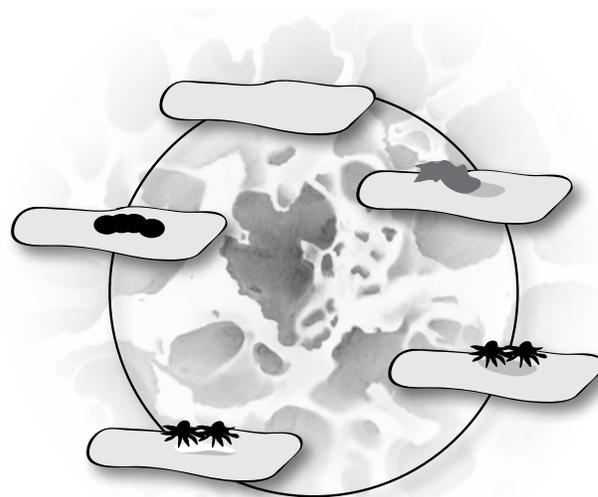
Cross-Section of Healthy Bone

When bone is **resorbed** or broken down, **osteoclasts** (⬛) dissolve the collagen matrix, releasing **DPD**, among other chemicals and minerals. Osteoblasts (✳) lay down **new bone** (osteoid ⌒) that consists of collagen, hyaluronic acid, chondroitin sulfate, and **osteocalcin**. When an osteoblast is finished laying down bone the osteoblast becomes a lining cell (⬤).

1. J *Bone Miner Res.* 1998.13(2):297-302. Study: 354 women

> Mean age of 62 at baseline; bone mineral density measured up to eight times over 13 years

> Reported that osteocalcin, urinary creatinine-corrected free [DPD], and other markers were associated with bone loss.

Results

> Osteocalcin was unchanged during the study.

> Urinary DPD secretion decreased 18%.

Decreased DPD suggests that less bone was lost over the three months, and no change in osteocalcin further suggests a positive environment for bone formation.

	Day 1	Day 90
Serum Osteocalcin	Maintained	
Urinary DPD	Decreased 18%	
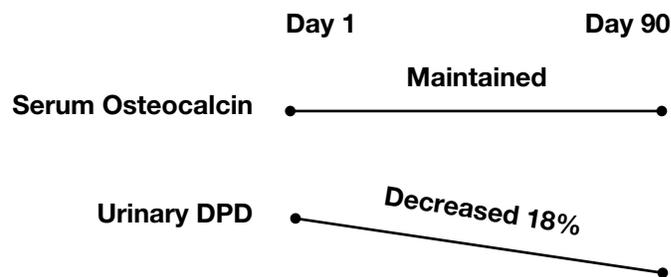
Overview

The assessment of bone-turnover markers, when examined over time, can identify individuals who are naturally losing bone mass quickly or slowly. Clinically, markers like osteocalcin and DPD point to specific issues like the loss of bone mineral density in the leg, but these markers represent only part of the equation used by clinicians.[2]

The cycle of bone breakdown (resorption) and formation occurs continuously. Between age 18 and 26, the body has maxed out on bone growth for most of us, although we continue to add bone mass until around age 30.[3] After age 30, bone mass begins to decrease naturally, and if resorption outpaces formation, bone density is lost.

There are a number of **risk factors**, some changeable and some not, that can affect an individual's rate of bone loss, and prevention appears to be the most effective strategy for maintaining bone density.

Prevention

It is well established that intake of both calcium and vitamin D are effective in supporting bone health, but a number of other nutrients may help maintain bone density as well.[4]

May Help

Boron	(raw avocado, nuts)
Copper	(organ meat, wheat bran)
Iron	(meat, vegetables)
Isoflavones	(legumes, soybeans)
Magnesium	(green leafy vegetables, oats)
Manganese	(nuts, legumes)
Phosphorus	(cheese, meat, eggs)
Potassium	(fruits, vegetables, fish)
Protein	(animal and plant sources)
Vitamin C	(citrus, cauliflower)
Vitamin K	(Brussels sprouts, cabbage)
Zinc	(red meat, nuts)

2. *Osteoporos Int.* 2007. 18(9):1297-1305.

> The Malmo Osteoporosis Prospective Risk Assessment study: 601 women, age 75

> Annual bone mineral density change measured over five years

3. Institute of Medicine. 1998. *Reducing Stress Fracture in Physically Active Military Women.* The National Academies Press: p. 29

Unchangeable **Risk Factors**	Modified **Risk Factors**
> Female gender	> Lifetime low consumption of calcium, vitamin D, fruits, vegetables
> Increasing age	
> Small body frame	> Lack of exercise, consumption of alcohol, smoking
> Caucasian or Asian ethnicity	
> Family history	> Certain medications
	> Low or abnormal sex-hormone levels

4. U.S. Department of Health and Human Services. *Bone Health and Osteoporosis: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, Office of the Surgeon General, 2004. Adapted from Table 7-5.