# OSTEOBEN™

Medical Food for the dietary management of osteopenia and osteoporosis.

## INGREDIENTS

| OSTEOBEN™ | Amount per serving |
|---|---|
| Serving size | 4 capsules |
| Number of servings per container | 30 |
| Vitamin D (as Cholecalciferol) | 1000 IU |
| Vitamin K (as Vitamin K2 Menaquinone-7) [Menaquinone Gold from NutriScience] | 50 mcg |
| Calcium (as DimaCal® Di-Calcium Malate) | 400 mg |
| Magnesium (as di-Magnesium Malate) | 400 mg |
| *Genestein aglycone (98% material) | 54 mg |
| Milk Basic Protein (as MBP®) | 40 mg |
| *Zinc (as citrated zinc bisglycinate 20%) | 8 mg |

**OSTEOBEN™** is available in a 120 capsule size.

**RECOMMENDED USE**

Take 2 capsules, two times per day, or as directed by a physician.

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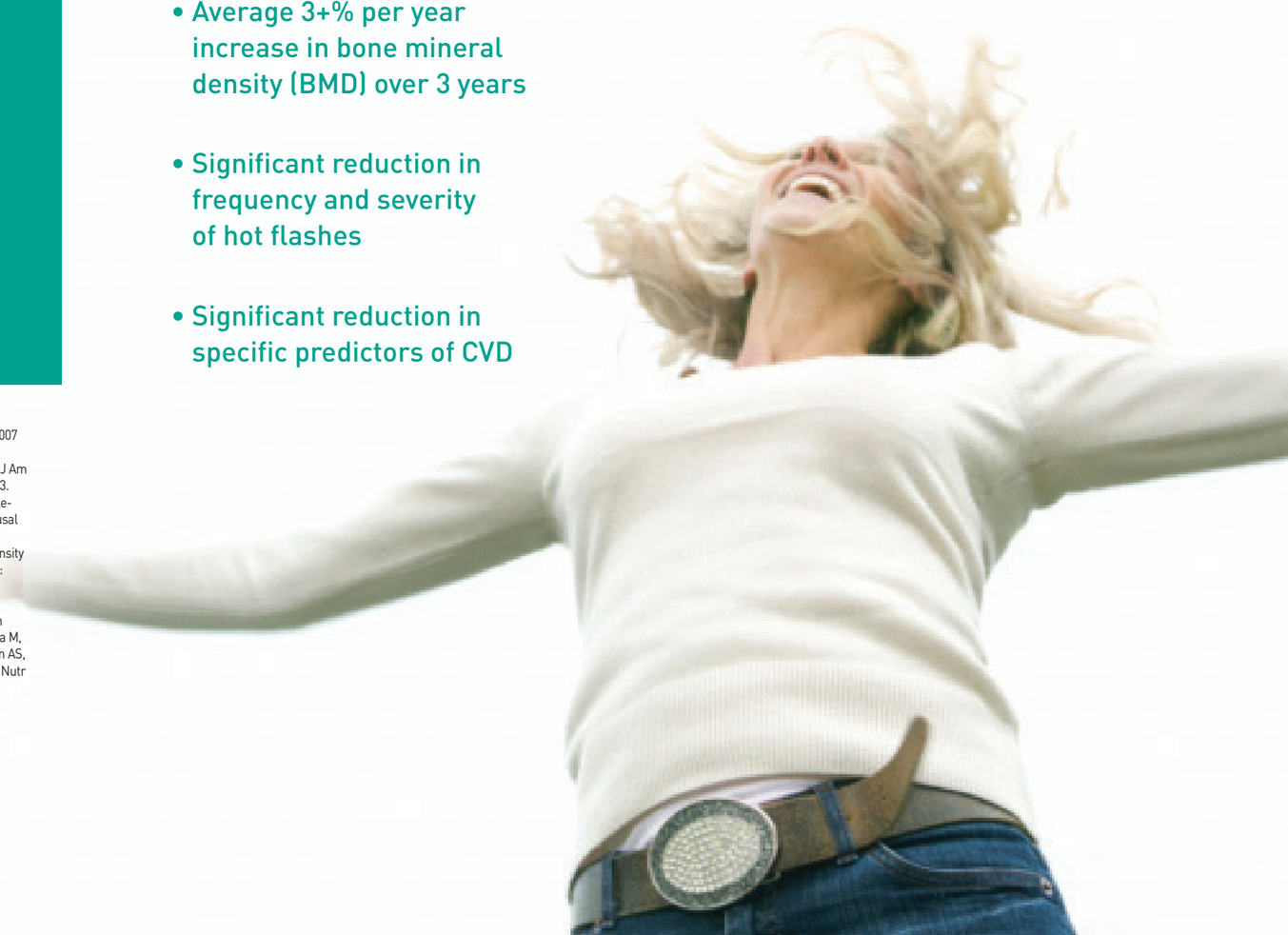
ZTECH ARB

# OSTEOBEN™

## MEDICAL FOOD

For the dietary management of osteopenia and osteoporosis

- Average 3+% per year increase in bone mineral density (BMD) over 3 years
- Significant reduction in frequency and severity of hot flashes
- Significant reduction in specific predictors of CVD



# KEY ACTIVES IN OSTEOBEN™

## GENISTEIN AGLYCONE

Hormone replacement therapy is an effective treatment for postmenopausal bone loss, however, side effects include increased risk for breast, endometrial, and ovarian cancer; cardiovascular disease; venous thromboembolism; and stroke. Genistein is a phytoestrogen that may positively regulate bone cell metabolism without serious side effects.

## CALCIUM AND VITAMIN D

Although there is a clear dietary need for sufficient calcium and vitamin D3 intake among individuals with osteopenia and osteoporosis, the majority of postmenopausal American women are deficient in these nutrients. In spite of their importance, available data suggest that calcium and vitamin D3 alone is not adequate to manage menopausal bone loss. However, there is good reason to believe that supplementation with these nutrients combined with other intervention strategies maximizes restoration of bone loss.

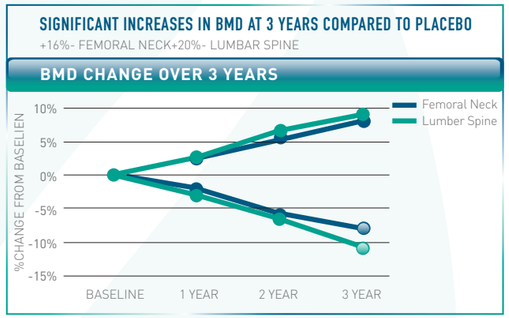
## OTHER BENEFITS

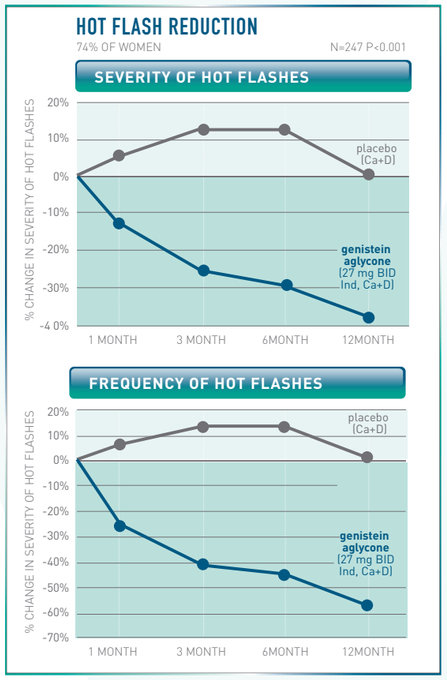
- Decreased levels of bone resorption markers
- Increased levels of markers of new bone formation
- Significant reduction in specific predictors of cardiovascular risk
- No side effects on endometrial thickness or vaginal mucosa compared with placebo

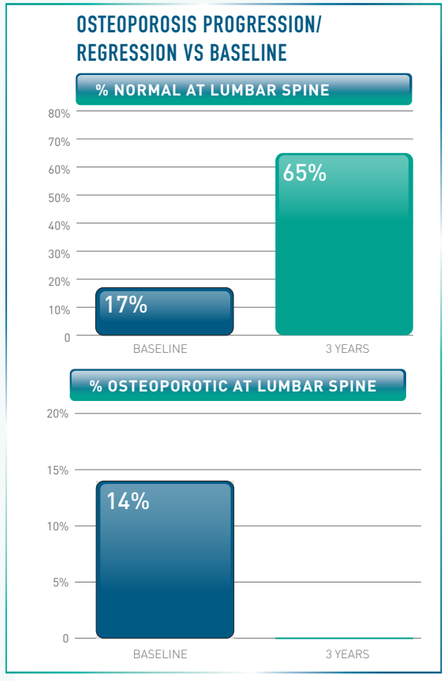
## COMBINATION THERAPY

In a study published in *The Annals of Internal Medicine*, genistein aglycone, combined withcalcium and vitamin D3, were compared to calcium and vitamin D3 alone.[1] Compared to placebo, the genistein combination:

- **Significantly increased** bone mineral density (BMD)
- **Decreased** urinary pyridinoline and deoxypyridinoline
- **Increased** levels of bone-specific alkaline phosphatase
- **Did not change** endometrial thickness




# OTHER ACTIVES IN OSTEOBEN™

## MILK BASIC PROTEIN (AS MILK BASIC PROTEIN: MBP®)

Healthy menopausal women receiving 40 mg of milk basic protein per day for six months had significantly higher mean rate of gain of lumbar BMP compared to placebo group (93)[1].Healthy young women receiving 40 mg MBP for six months had significantly higher mean rate of gain of lumbar BMD compared to placebo group (94) [2]. Mean rate increase of BMD of the left calcaneus was significantly higher in the group of healthy adult women taking 40 mg of MBP per day for six months compared to control group (95) [3]. Daily intake of 40 mg of MBP for six months by healthy adult women resulted in significantly higher BMD at both the 1/6 and 1/10 portion from the distal end of the radius compared to control group (96)[1-3]. Subjects receiving 40 mg per day of MBP had lower urinary cross-linked N-telopeptides of type-1collagen (NTx) and higher serum osteocalcin (93-95). OSTEOBEN™-MF provides 40 mg of milk basic protein at 2 capsules, taken two times per day.

### MILK BASIC PROTEIN

- Increased bone mineral density (BMD)
- Lower NTx
- Higher serum osteocalcin

## MAGNESIUM (AS DI-MAGNESIUM MALATE)

Greater magnesium intake is significantly related to higher BMD in older white men and women (51)[4]. Several studies have shown significantly higher bone density in individuals receiving magnesium supplements. (49, 50)[5-6] Postmenopausal women taking oral magnesium supplement for 30 days had significantly higher serum osteocalcin levels and lower urinary deoxypyridinoline levels (52)[7]. Postmenopausal osteoporotic women receiving magnesium supplementation for 30 days had significantly increased serum iPTH levels and osteocalcin and reduced urinary deoxypyridinoline levels supporting the role of magnesium in suppressing bone turnover (52)[7]. Insufficient dietary magnesium has been associated in humans with low bone mass. The majority of the population in the U.S. gets less than the RDA of magnesium in their diet, while numerous factors accelerate mg losses, including stress, caffeine, alcohol, environmental toxin exposure, physical activity, etc.

**68% of Americans get less than the RDA of magnesium in their diets.**

## VITAMIN K (AS K2 MENAQUINONE-7)

Vitamin K2 menaquinone-7 supplementation significant increase total-body BMD and lumbar spine BMD (45)[8]. Women who received dairy products fortified with vitamin K menaquinone-7 for 12 months has significant increase in total-body BMD and lumbar spine BMD. Undercarboxylated osteocalcin is inversely correlated with BMD (46)[9]. MK-7 increases osteocalcin carboxylation (47;48)[10,11]. Vitamin K2 inhibits apoptotic cell death of osteoblasts and preserves the number of osteoblasts (23)[12].

**Combination nutritional therapies have been found to be more effective than calcium and vitamin D3 alone.**

## ZINC (AS CITRATED ZINC BISGLYCINATE)

Zinc is an important nutrient for bone health and poor zinc status may be an important predictor of bone loss (71)[13]. Low serum zinc and increased zinc excretion are associated with osteoporosis (82;83;84)[14-16], however the precise nature of the relationship is unclear. Data suggest that 40 % of men and women over 65 years old had zinc intake at least 33% under the former RDA of 15 mg/ day (72)[17]. The combination of genistein and zinc produce additive effects on bone loss, cell survival, and gene expression in vitro. Genistein and zinc may produce complementary effects on osteoblast and osteoclast function that restore the metabolic balance in bone turnover that is disrupted by postmenopausal ovarian hormone loss. Preliminary data suggest that daily intake of 15 mg of zinc increases BMD by 1.28% over two years when taken with 1000 mg of calcium daily (92)[18].

**OSTEOBEN™ provides a combination of nutrients with demonstrated efficacy in managing menopausal bone loss and increasing bone mineral density.**