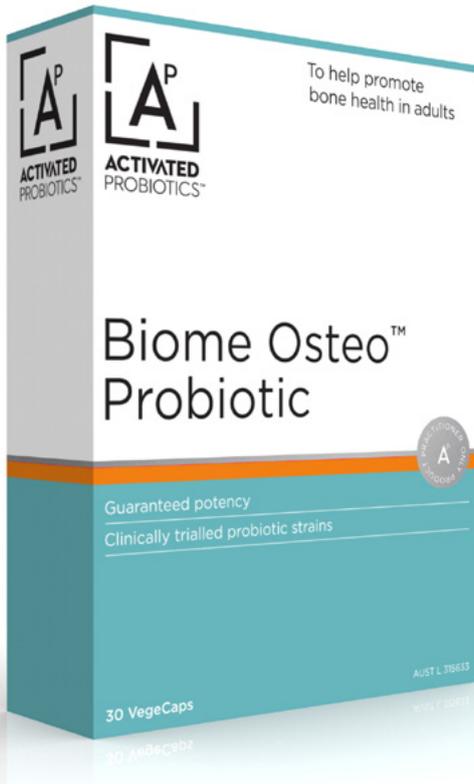




Biome Osteo™ Probiotic

To help promote bone health
in adults



PREMIUM, PRACTITIONER-ONLY PRODUCT



Clinically trialled in post-menopausal women

Guaranteed potency

INDICATIONS

- Biome Osteo™ may help to promote bone health in adults

FORMULATION

<i>Lactobacillus plantarum</i> HEAL9 (DSM 15312)	3.3 BLB*
<i>Lactobacillus plantarum</i> HEAL19 (DSM 15313)	3.3 BLB*
<i>Lactobacillus paracasei</i> 8700:2 (DSM 13434)	3.3 BLB*
Total live bacteria	10 BLB*
Vitamin D3 (as cholecalciferol)	60IU (1.5mcg)

*BLB = Billion Live Bacteria

DIRECTIONS FOR USE

Adults: take 1 capsule daily (with or without food), or as directed by your healthcare practitioner.

If you are pregnant or breastfeeding - seek the advice of a healthcare practitioner before using.

NO ADDED

GMOs, wheat, gluten, dairy, lactose, fructose, yeast, nuts, seeds, peanut, soy, egg, fish, or shellfish. No artificial colours, flavours, sweeteners, or preservatives.



GMP



LIVE
PROBIOTIC
PROMISE



DAIRY
FREE



ONE A DAY
FORMULATION



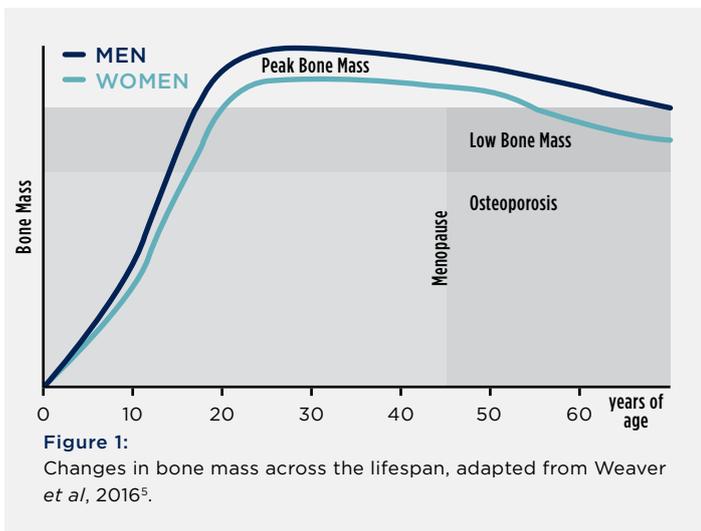
FRIDGE
FREE



VEGETARIAN

Activated Probiotics™ formulate premium probiotic products backed by cutting edge scientific research on the human gut microbiome. Using targeted bacterial strains at doses supported by clinical trials, we seek to provide tangible improvements in health and wellbeing with a new generation of evidence-based probiotics.





THE BURDEN OF OSTEOPOROSIS IN AUSTRALIA

Conditions characterised by low bone density - including osteopenia and osteoporosis - affect an estimated 7.5 million Australians¹. Osteoporosis causes bones to become thin, fragile and weak, and occurs when bones lose minerals faster than they can be replaced. A reduction in bone mineral density increases the risk of bone fractures, which can occur from minor accidents, such as falling while walking. These low impact fractures are known as minimal trauma fractures. As there are no obvious symptoms of osteoporosis, the condition often goes undiagnosed until a minimal trauma fracture occurs. Minimal trauma fracture of the hip represents one of the most serious outcomes of osteoporosis, which occurs most commonly in women aged 80 and over². Fractures can lead to chronic pain, disability, loss of independence, and even premature death.

RISK FACTORS FOR OSTEOPOROSIS

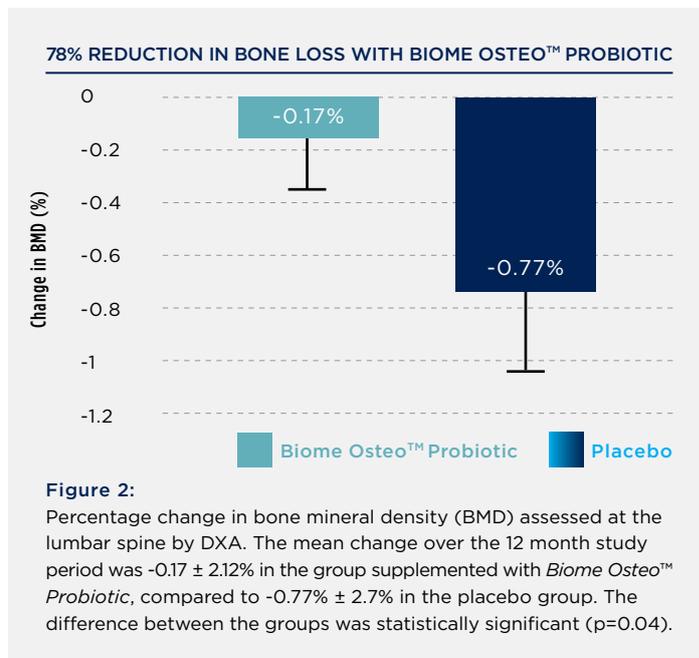
Risk factors associated with the development of osteoporosis include being female, increasing age, family history of the condition, low vitamin D levels, low intake of calcium, low body weight, smoking, excess alcohol consumption, physical inactivity, and long-term corticosteroid use³. Women are at greater risk of developing osteoporosis than men due to their smaller bone size, lower Peak Bone Mass, and the rapid loss of bone density which occurs following menopause^{4,5} (see Figure 1). Menopause-associated oestrogen deficiency accelerates age-related bone loss, as oestrogen has a protective effect on bones. As such, particularly high rates of bone loss are seen in the early post-menopausal period⁴.

BONE REMODELING

Bone is a dynamic tissue that undergoes continuous remodelling throughout the lifespan, such that the entire skeleton is replaced every 10 years⁶. This is accomplished by the bone remodeling unit, which consists of specialised cells which form new bone (osteoblasts), and degrade dysfunctional bone (osteoclasts)⁶. After the attainment of Peak Bone Mass in early adulthood, bone remodelling is balanced, such that bone mass is stable for one to three decades until age-related bone loss begins⁶ (see Figure 1).

REFERENCES

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AN EMERGING ROLE OF THE GUT MICROBIOME

In addition to the absorption of nutrients, increasing evidence suggests a more complex role of the gut in the maintenance of bone health, mediated through the gut microbiome⁷. Numerous preclinical trials have investigated the relationship between the gut microbiome and bone health in animal models, as summarised by Villa *et al*, 2017⁷. In mouse models simulating menopause-associated estrogen deficiency, supplementation with lactobacilli bacteria has been shown to protect against bone loss^{8, 9, 10}. On the basis of encouraging preclinical results, a multicenter, randomised, double-blind, placebo-controlled trial was conducted in 2018 in Sweden to investigate the efficacy of a novel three-strain probiotic product (*Biome Osteo™ Probiotic*) on maintaining bone mineral density (BMD) in 249 healthy, early post-menopausal women (unpublished manuscript; currently under review).

BIOME OSTEO™ PROBIOTIC CLINICAL TRIAL

The participants received *Biome Osteo™ Probiotic* or an identical placebo capsule daily for a period of 12 months. The primary endpoint of the study was the percentage change in BMD at the lumbar spine (LS-BMD) from baseline to 12 months, as assessed by dual energy x-ray absorptiometry (DXA). At the end of the study period, the participants in the intervention group had a significantly smaller percentage change in LS-BMD compared to the placebo group (mean change of $-0.17\% \pm 2.12\%$ vs. $-0.77\% \pm 2.7\%$), which was statistically significant ($p=0.04$) (Figure 2). Further, a subgroup analysis revealed that in women who were less than six years post-menopause, the effect of the probiotic was even more pronounced, with a percentage loss of LS-BMD of 0.18%, compared to 1.21% in the placebo group ($p=0.025$). On the basis of these results, the authors concluded that **daily supplementation with *Biome Osteo™ Probiotic* reduced the loss of BMD at the lumbar spine in early post-menopausal women.**