Aquamin and bone health

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Aquamin & bone health in post-menopausal women

Bones play many roles in the body including: providing structure, protecting organs, anchoring muscles and storing minerals.

While it's important to build strong and healthy bones during childhood and adolescence, it is also essential to maintain bone health in adulthood for wellbeing during ageing and to maintain an active lifestyle. Bones are continuously changing with new bone being formed and old bone being reabsorbed.

Up to the age of 30 the body makes new bone faster than it breaks down old bone, therefore bone mass increases. After that, bone remodeling continues, but slightly more material is lost than is formed so bone density decreases therefore, bones become weaker and more susceptible to fracture.

Due to the decrease of bone mass, osteoporosis is a growing disease that mainly affects women after menopause:

- Worldwide, 200 million post-menopausal women suffer from osteoporosis, which represents 70% of this class;
- There is an osteoporotic fracture every 3 seconds[1].

Osteoporosis is the most common bone disease in humans and it consists of a degradation of the bone mass and architecture, and impairs the ability of the skeleton to perform fundamental mechanical functions. Osteoporosis leads to the weakening of bone strength and an increase in the risk of fractures.

Calcium is needed for the maintenance of normal bones and teeth. The current International Osteoporosis Foundation recommendation for daily calcium intake is as below[2]:

Table 1:
EU and USA calcium recommendation by group

GROUP	AGE	EU CALCIUM RECOMMENDATION	USA CALCIUM RECOMMENDATION
Children	1 - 10	800mg / day	1000mg / day (3-8 years)
Teenagers	11 - 17	1200mg / day	1300mg / day (9-18 years)
Male Adults	18+	800mg / day	1000mg / day
Female Adults	18+	800mg / day	1000mg / day
Pregnancy, Lactation & Menopause		1200mg /day	1200mg / day

Aquamin is a marine derived multi-mineral complex, which possesses unique attributes to help maintain healthy bone formation. The role of Aquamin in bone health is grounded in excellent science demonstrating real effects in increasing bone strength.

Aquamin assists in maintaining bone health in a number of ways including:

- Providing a bioavailable source of calcium and other essential trace minerals.
- Enhancing movement and physical activity by reducing symptoms associated with inflammation.
- Influencing biochemical bone turnover markers.

Marigot undertook a large-scale investigation[3] into mineral supplementation and bone health in post-menopausal women, in which 300 healthy women between 48 and 75 years old were randomly assigned to daily supplements of 800 mg of Ca (Aquamin) with 3.6g of scFOS (short-chain, fructo-oligosaccharides), or 9g of maltodextrin (Placebo).

The study was conducted during 24 months to measure Bone Density (DEXA) and Bone turnover markers (CTX and osteocalcin)[3].

The main results were:

- Aquamin + scFOS (NutraFlora®) slowed bone loss (BMD) in osteopaenic women compared to placebo (Figure 1).
- Aquamin + scFOS (NutraFlora®) reduced bone turnover marker levels.
- A significant decrease in bone markers (osteocalcin & CTX) was observed in both treatment groups (Figure 2).

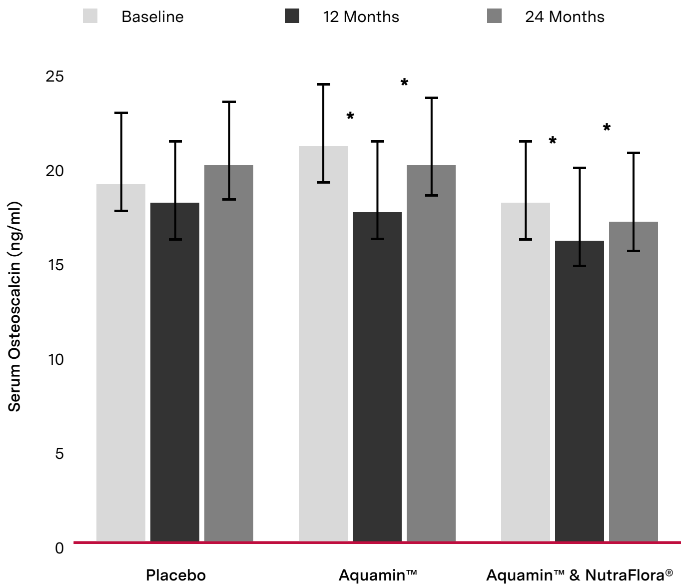


Figure 1:

DEXA scans confirm bone protection in the lumbar spine in the combination group.

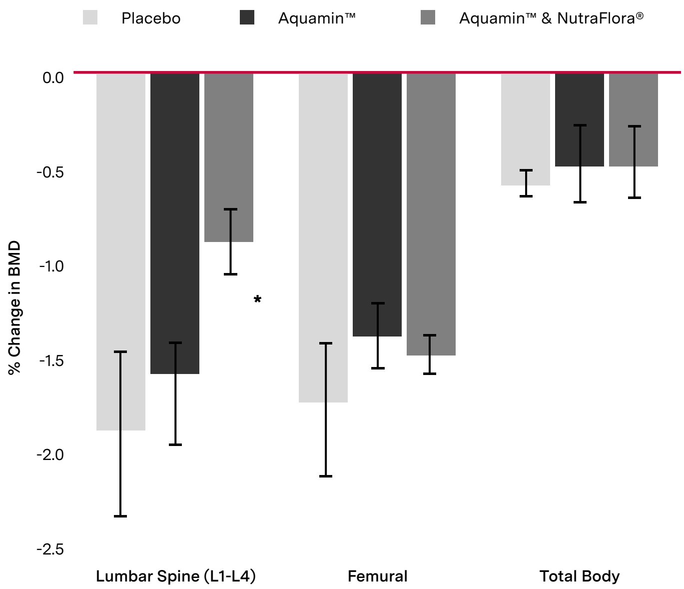


Figure 2:

Significant changes were seen in the bone markers, osteocalcin and CTX, in both treatment groups.

Aquamin consumption before and during exercise can offset calcium metabolism disruption associated with exercise in post-menopausal women[4].

As a conclusion, supplementation resulted in a more favorable bone health profile and prebiotics enhance mineral absorption. The timing of Ca supplementation may be a key mediator of Ca homeostasis during acute exercise. Further research is necessary to determine how this influences skeletal adaptations to training.

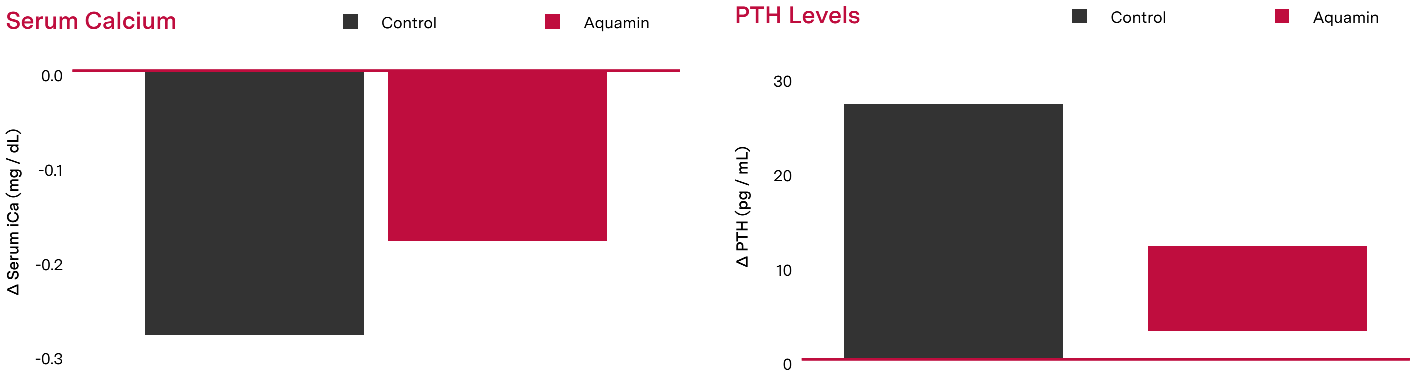


Figure 3:

Changes in serum calcium and serum PTH are diminished when Aquamin is consumed (compared to control) in post-menopausal women undergoing a 60-minute brisk walking exercise test.

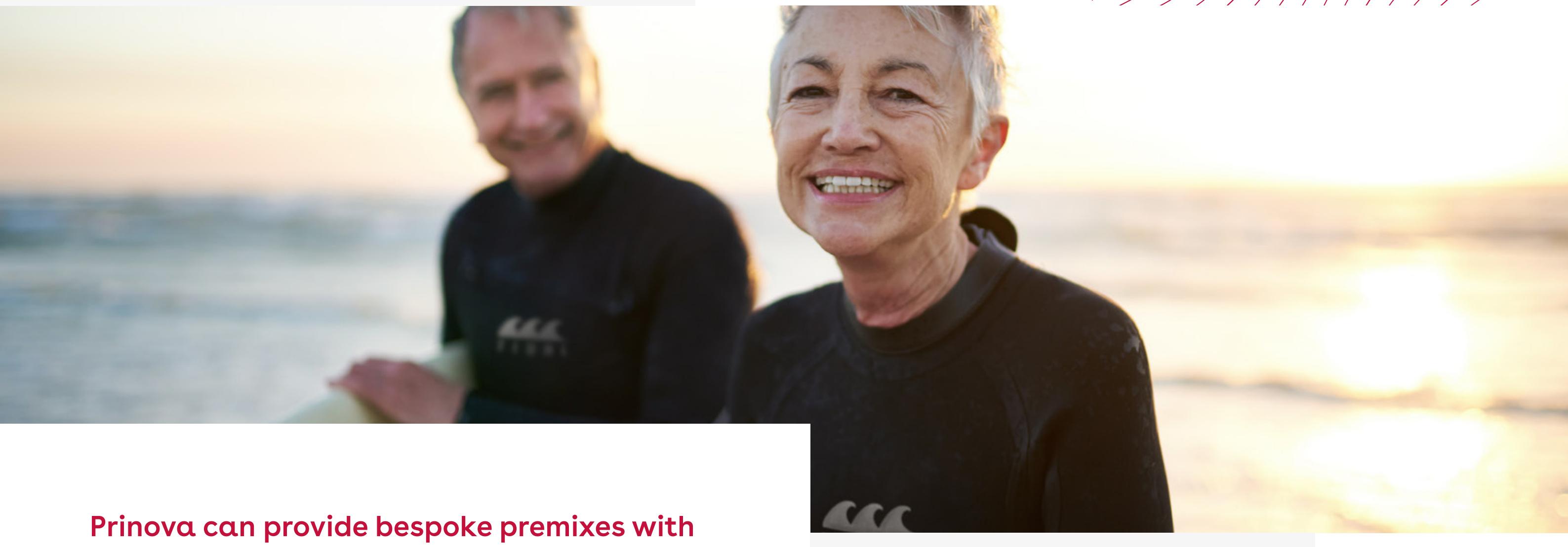
Prinova is the UK & Ireland distributor for the Aquamin range

Table 2:

Application, Ca and Mg content per Aquamin Grade

Available Grades:

GRADE	Ca CONTENT %	Mg CONTENT %	APPLICATION
Aquamin AG	30%	2.2%	Vegetable drinks (e.g. Rice)
Aquamin F	32%	2%	Foods (All)
Aquamin S	17%	1%	Beverages, Fruit Juices
Aquamin SOLUBLE	12%	1%	Beverages, Supplements
Aquamin TG	30%	2.2%	Supplements
Aquamin Mg AG	1%	33%	Beverages, Supplements
Aquamin Mg TG	1%	33%	Supplements
Aquamin Mg Soluble	1%	12%	Clear Beverages



Prinova can provide bespoke premixes with other nutrients that work in synergy with Aquamin products:

Table 3:

Prinova Vitamin & Mineral premix example as a supplement application

NUTRITIONAL INFORMATION	AVERAGE PER 2 TABLETS	% EC NRV*
Vitamin D (as D3 1000 IU)	25 µg	500
Calcium (Aquamin TG)	800 mg	100
Magnesium (Aquamin Mg TG)	300 mg	80
Zinc	10 mg	100
Copper	500 µg	50
Manganese	0.5 mg	25
Selenium	55 µg	100
Boron	0.6 mg	–

As bone is a living tissue, the essential nutrients to keep it healthy should be included in the diet. It is known that calcium contributes to the maintenance and development of healthy bones and that Vitamin D3 aids calcium absorption and utilisation within the body.

Zinc and Magnesium are also recognised to play a role in the maintenance of healthy bones.

As nothing in nature works in isolation, the ideal supplement would provide these essential nutrients and others together in a manner to facilitate maximum co-operation and benefit.

References

[1] Johnell O and Kanis JA (2006) An estimate of the worldwide prevalence and disability associated with osteoporotic fractures. Osteoporos Int 17:1726

[2] EFSA – Health Claims for Calcium, Under Article 13.1 general health claims, June 2011

[3] Slevin et al, Supplementation with Calcium and Short-Chain Fructo-Oligosaccharides Affects Markers of Bone Turnover but Not Bone Mineral Density in Postmenopausal Women, 2014

[4] Shea et al, Calcium Supplementation and Parathyroid Hormone Response to Vigorous Walking in Postmenopausal Women, 2013