

Boosting bone health with Orafti® Synergy¹



beneo 
orafti



An ingredient that breaks new ground

Oligofructose and inulin are dietary fibres that occur naturally in over 36,000 plants and vegetables. However, unlike most dietary fibres, they are selectively fermented by intestinal flora. This means they act as prebiotics and thus improve the balance of the body's intestinal flora by stimulating beneficial bifidobacteria and contributing to a healthy digestive system.

But the benefits do not end there. BENE0-Orafti's work with illustrious researchers from some of the world's leading academic institutes has established that oligofructose and inulin also help the body to absorb more essential nutrients, such as calcium, from the diet.

Orafti®Synergy1 is an oligofructose-enriched inulin with powerful prebiotic and bone health properties. Research by Professor Abrams at the Children's Nutrition Research Center, Baylor College of Medicine, Houston, Texas¹, has not only shown that Orafti®Synergy1 increases calcium uptake, but also concluded that the extra calcium absorbed is going exactly where it is needed - straight to the bones.



prebiotic

Orafti®Synergy1

bone health

A powerful weapon in the battle against osteoporosis

Characterised by low bone mineral density and increased bone fragility, osteoporosis affects one in three women after the menopause. As life expectancy increases in the western world, so does the prevalence of the disease - at an alarming rate.

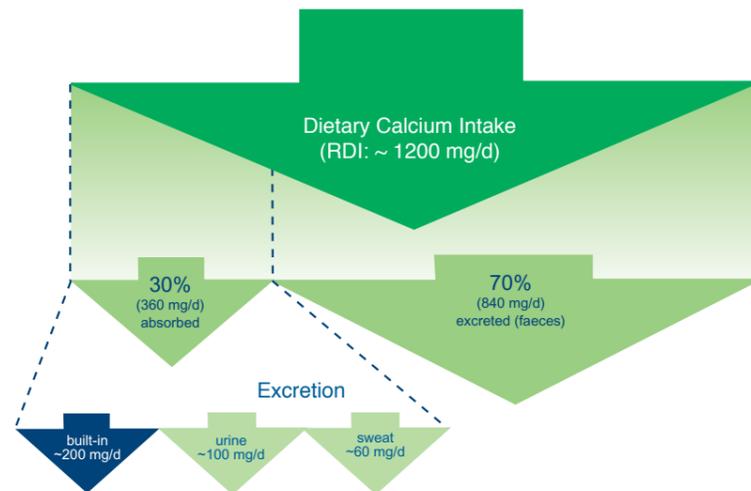
Maximising peak bone mass during adolescence and minimising bone mineral loss during old age can postpone osteoporosis. The problem is that all the calcium needed for a healthy bone structure has to come from the diet. Only one third of ingested calcium is actually absorbed, while the rest is excreted.

Increasing calcium intake via supplementation and calcium-fortified foods goes some way to addressing the issue. However, poor mineral absorption can prevent increased intake from translating into increased uptake by the body.

A solution has come in the form of Orafti®Synergy1, which has been shown to promote absorption of dietary calcium. The fermentation of Orafti®Synergy1 in the colon stimulates the production of short chain fatty acids. Consequently, the acidity in the large intestine increases significantly, making the calcium in the colon more soluble and therefore increasing its bioavailability.



Calcium absorption



Increasing calcium uptake

Support for the role of inulin and oligofructose in mineral absorption began in the early nineties with a series of animal and human studies. The results of the human studies were promising. However, in these studies, inulin and oligofructose were consumed at extremely high daily dosage levels (15 to 40g).

In the light of these results, BENE0-Orafti developed a new form of oligofructose-enriched inulin called Orafti®Synergy1.

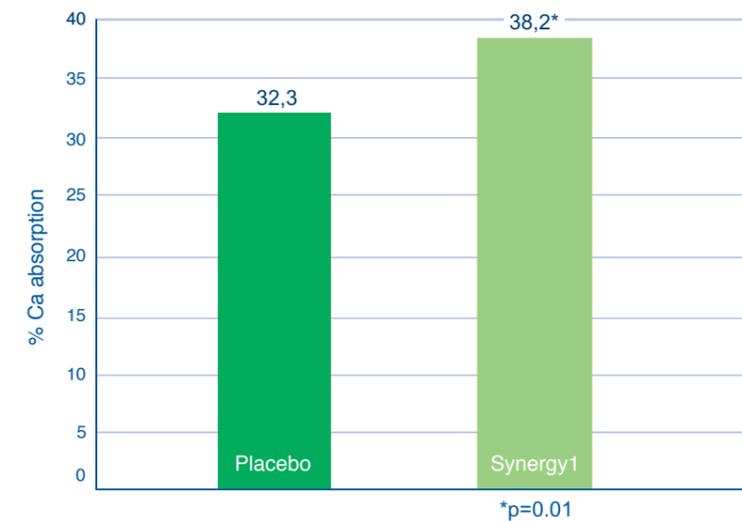
The ingredient has superior efficiency in increasing calcium absorption. In a comparative animal study², Orafti®Synergy1 resulted in a significantly higher increase in calcium uptake in comparison to standard oligofructose or inulin.

Human studies have since then lent further support to these findings. In 2002, 29 adolescent girls took part in a double-blind cross-over study led by Professor Griffin at the Children's Nutrition Research Center at

the Baylor College of Medicine in Houston, Texas³. Just 8g per day of Orafti®Synergy1 boosted calcium absorption by almost 20%.

Such positive results are not limited to adolescents only. In 2007, 10g per day of Orafti®Synergy1 was shown to increase calcium and magnesium absorption by respectively 20% and 10% in post-menopausal women. The study was carried out by a team of researchers from the Palo Alto Health Care Center in California⁴.

Calcium uptake with Orafti®Synergy1 versus placebo



Orafti®Synergy1

The missing link

A ground-breaking long-term study has now taken bone health science to a new level, providing concrete evidence that increased calcium absorption actually translates into tangible improvements in bone health.

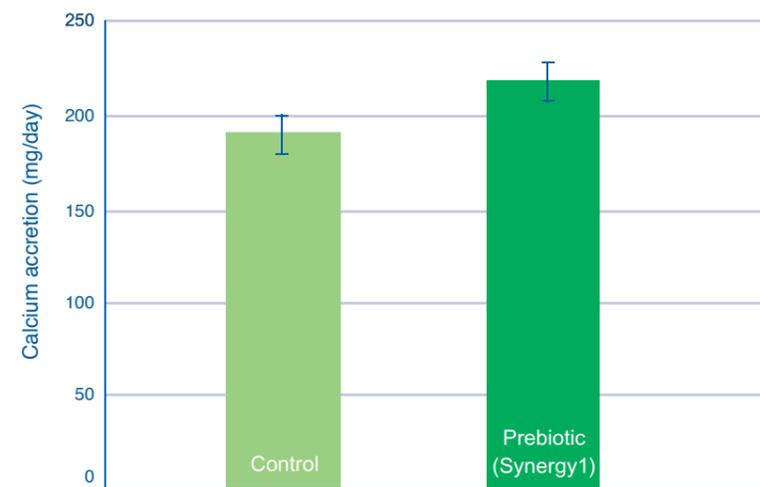
The double-blind human intervention study was carried out at the Children's Nutrition Research Center, Baylor College of Medicine, Houston, Texas¹. 100 adolescents were given either 8g Orafti®Synergy1 or an equivalent amount of placebo every day for one year.

Calcium absorption and bone mineral density were far higher in those who consumed Orafti®Synergy1. Indeed, at eight-week and one-year interventions, calcium absorption had increased by about 20% with Orafti®Synergy1. After one year, the increase in Bone Mineral Density (BMD) was 45% higher among the Orafti®Synergy1 group compared to the controls.

The researchers also measured Bone Mineral Content (BMC) and found that in

the Orafti®Synergy1 group bone calcium accretion was higher by an extra 30mg per day - proof that extra calcium absorbed was actually deposited in the bones.

Calcium accretion measured through the change in whole body Bone Mineral Content, assessed by DEXA



health

nutrition

natural ingredients

New bone health claims

For food manufacturers looking to create evidence-based products which deliver proven health benefits, this research offers untold opportunities for making powerful claims.

In the context of the new EU Legislation on the use of Nutrition and Health claims, a list of pre-approved claims will be established (Article 13).

BENE0-Orafti submitted the following proposals under this Article 13-list, for claims related to calcium and bone health with Orafti®Synergy1 starting from 8 g/day:

- increased calcium absorption,
- increased bone mineral density.

BENE0-Orafti is confident that these claims are justified and supported by generally accepted scientific evidence.

Whether you are looking to develop a product aimed at maximising bone health in children or minimising calcium loss in middle-aged consumers, you can capitalise on the science that supports Orafti®Synergy1. The versatile ingredient can be incorporated into staple foods - from fruit juices to yogurts and cereal bars - as well as functional foods. Even calcium-enriched products can benefit from Orafti®Synergy1.

Whatever your objective is, our technical, regulatory, nutritional and marketing experts will work closely with you to design a compelling product concept that is unique.



¹ Abrams S.A., Griffin I.J., Hawthorne K.M., Liang L., Gunn S.K., Darlington G., Ellis K.J. (2005). A combination of prebiotic short- and long-chain fructans enhances calcium absorption and bone mineralization in young adolescents. *American Journal of Clinical Nutrition*, 82, 471-476.

² Coudray C., Tressol J.C., Geux E., Rayssiguier Y. (2003). Effects of inulin-type fructans of different chain length and type branching on intestinal absorption and balance of calcium and magnesium in rats. *European Journal of Nutrition*, 42, 91-98.

³ Griffin I.J., Davila P.M., Abrams S.A. (2002). Non-digestible oligosaccharides and calcium absorption in girls with adequate calcium intakes. *British Journal of Nutrition*, 87, Suppl. 2, S187-191.

⁴ Holloway L., Moynihan S., Abrams S., Kent K., Hsu A.R., Friedlander A.L. (2007). Effects of oligofructose-enriched inulin on intestinal absorption of calcium and magnesium and bone turnover markers in postmenopausal women. *British Journal of Nutrition* 97(2), 365-372.



BENEO-Orafti is part of the BENE0-Group,
a division of the Südzucker Group that specialises in functional ingredients.

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