AVESTHAGEN

Bonapure™

promotes bone health

Need and opportunity

With an ageing population and increasing awareness of bone health issues, greater importance will continue to be placed on foods and supplements that benefit bone health.An emphasis on stronger bones in children has spurred interest in bone health promoting ingredients.

Bonapure™ is prepared from a single herb (AN01) selected from ADePt™ and validated using Metagrid™. Bonapure™ acts by enhancing alkaline phosphatase activity in osteoblast cells. Bonapure™ can help support healthy bone structure and promote stronger bones*.

How Bonapure™ works

Fig.1: Promotion of bone health by Bonapure™

Alkaline phosphatase (ALP) enzyme is primarily associated with bone forming cells - Osteoblasts. Bonapure™ boosts the level of ALP observed during rapid bone formation phase by bone nodule formation. Bonapure™ is shown to help induce ALP activity in osteoblast cells (Fig. 1).

MetaGrid™

Comprehensive Constituent Profiling for bioactives

MetaGrid™ enables a wide spectrum profiling of bioactives that is possible through a unique algorithm embedded in its architecture. MetaGrid™ generates a metabolite fingerprint that not only profiles the bioactive but also provides QA/QC capability.

MetaGrid™ is used to test and verify reproducibility of Bonapure™ extract from batch to batch (Fig. 2 MetaGrid™).

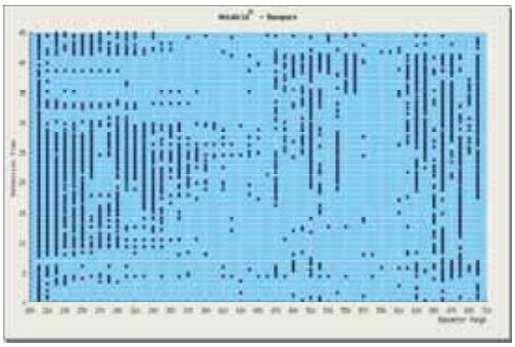

Fig.2: MetaGrid™ of Bonapure™

Bonapure™ acts by inducing alkaline phosphatase activity thereby boosting bone nodule formation in osteoblasts.

Bonapure™ efficacy was confirmed by its activity in inducing Alkaline Phosphatase (ALP) Activity Assay.

The osteoblasts were seeded at a density of 75,000 cells per well in 24 well plates. The cells were cultured for one day before Bonapure™ was added. The osteoblasts were cultured for 14 days in a medium supplemented with ascorbic acid and ß-glycerol phosphate and incubated with two concentrations of Bonapure™ at 1:1000 and 1:10,000 dilutions and a positive control Bone Morphorgenic Protein-2 (BMP-2), which induced the differentiation of the osteoblasts. Bonapure™ showed induced bone health activity as observed by alkaline phosphatase assay (Fig. 3).

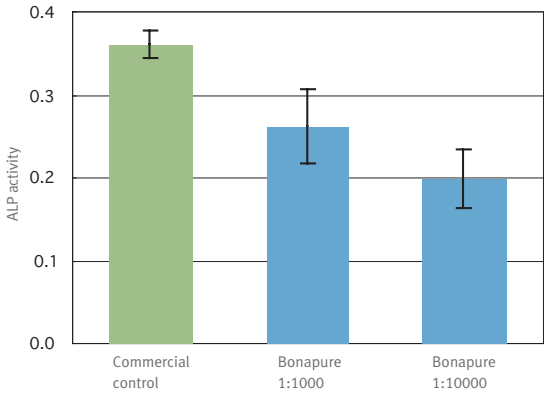

Fig. 3: ALP inducing activity of Bonapure™

Bonapure™ is proven to be safe by scientific studies. One safety study was carried out by sophisticated cell viability assay. MC3T3 cells were seeded in 96 well plates in a density at 20,000 cells per well. The cells were cultured for one day before Bonapure™ was tested at Bonapure™ at 1:1000 and 1:10,000 dilutions . After addition of the extracts the cells were cultured for three days before the experiment was ended. After the three days of incubation the cell viability was measured according to the protocol for the AlamarBlue assay and Toludine blue staining. Bonapure™ is non-toxic above 1:1000 dilution evident from the viability result shown (Fig. 4).

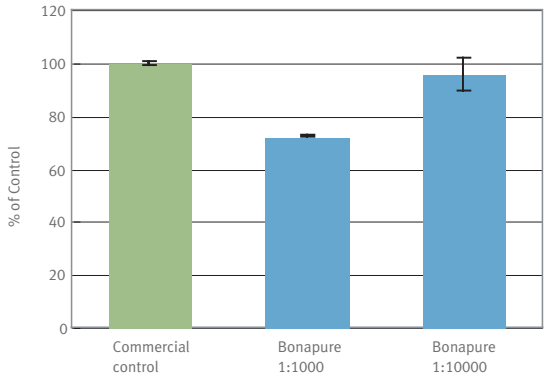

Fig. 4: Safety of Bonapure™

Salient features of Bonapure™

- Bonapure™ is isolated from a source traditionally known for promoting healthy bone structure and stronger bones*.
- Development of Bonapure™ follows a strict QC protocol at all stages of development.