

What is Upgro190?

It is a whey protein hydrolysate hydrolyzing whey protein with enzyme. Whey protein hydrolysates have been reported to have the effect of growth promotion, recovery aid, assimilation, and improving the immune system, etc., and Upgro190 is a product with enhanced growth promotion capabilities.

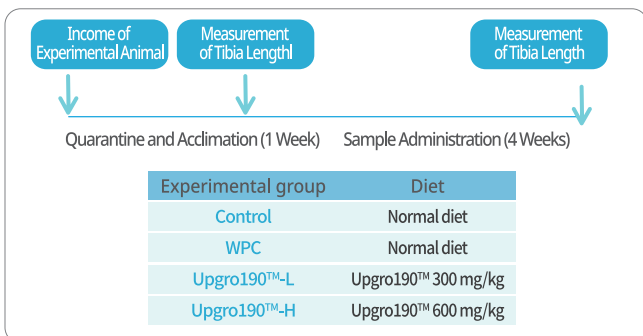
Features of Upgro190™

- Protein material that is digested and absorbed well by high hydrolysis
- Water-soluble material that is easy to apply to powder and beverage products
- Materials proven to be growth-promoting through cell and animal experiments

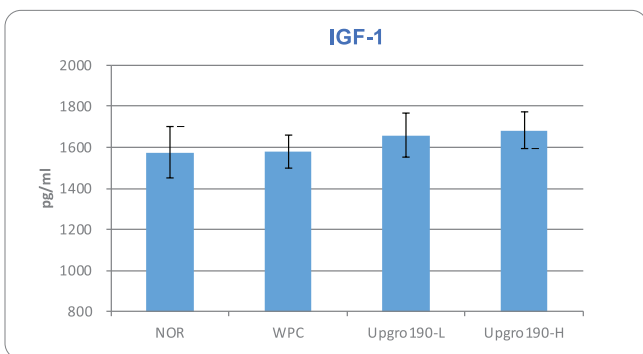
Mechanism of Upgro190™

- Promotion of ALP activity
- Increase in bone cell calcium accumulation
- Increase of growth hormone IGF-1

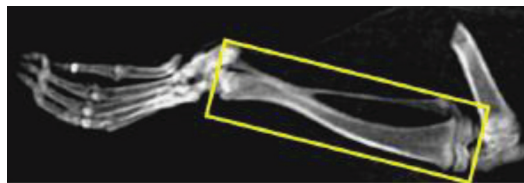
Animal Experiment



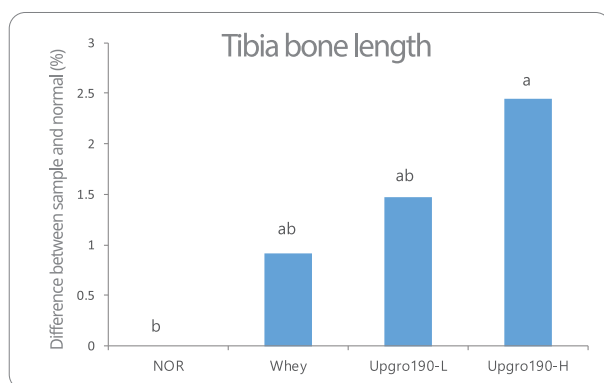
Three-week-old male white mice were divided into four groups for experiment. Feed intake, water intake, heart rate, and tibia length were measured every 3 days. The growth-promoting effect after 4 weeks was confirmed by mice.



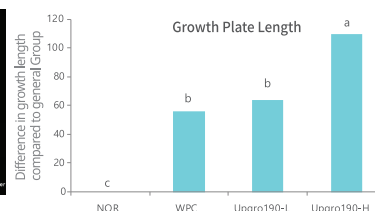
Insulin-like growth factor-1 (IGF-1) are synthesized and secreted in the liver and other organs by stimulation by growth hormone. IGF-1 has been reported to affect bone growth. Both Upgro190 with low concentration and Upgro190 with high concentration were higher than those of the normal diet and whey protein groups.



Bone analysis	NOR	Whey	Upgro190-L	Upgro190-H
BMC(mg)	296.55 ^{ns} ±7.26	298.60 ± 27.72	306.13 ± 24.10	317.35 ±27.70
BMD(mg/cm ³)	181.25 ^{ns} ±8.78	176.58 ± 8.59	173.00 ± 7.96	183.03 ±10.02
Bone Area(cm ²)	1.59 ^{ns} ±0.07	1.69 ± 0.12	1.74 ± 0.13	1.76 ± 0.05
Bone Volume(cm ³)	0.18 ^{ns} ±0.00	0.19 ± 0.01	0.19 ± 0.01	0.20 ± 0.02
Bone length(mm)	38.18 ^b ±1.00	39.10 ^{ab} ±1.41	39.65 ^{ab} ±1.25	40.63 ^a ±0.30



The bone mineral density, bone mineral content, bone area, bone volume, and length of the tibia were measured by group using x-ray measuring instrument. As a result, it is confirmed that the Upgro190 group increased in all indices and especially, the length of the tibia was significantly increased.



The length of the grown growth plate was measured by staining after dissecting the dissected tibia bone in the longitudinal direction. The length of grown growth plate of Upgro190 is longer as the length of the tibia of Upgro190 was significantly increased. In case of Upgro190 with low concentration, it was similar to the level of WPC.

Product Information

Item	Item
Appearance	Light yellow powder
Foreign material	Negative
Moisture (%)	8.0 or less
Total plate count	3,000cfu/g or less
Coliforms	Negative
Packing Unit	20kg(bag)