

【Features】

- Only Japan-grown chickens are used.
- Contain 5.0 % or more hyaluronic acid and 8.0% or more hydroxyproline
- Applicable to beverage for its solubility in liquids due to low-molecular weight

【SPEC】

Item	Specifications	Method for Analysis
Appearance	Light yellowish powder	Eye Observation
Odor	Characteristic	Sensory test
pH	3.6~5.6	pH meter (1% solution)
Hyaluronic acid (w/wt%)	5.0 or more	HPL
Hydroxyproline (w/wt%)	8.0 or more	Amino acids automatic analysis method
Loss on Drying (w/wt%)	7.0 or less	Drying under reduced pressure
Arsenic (as As ₂ O ₃) (ppm)	2 or less	Atomic Absorption Spectrometry
Heavy metal (equiv.Pb) (ppm)	20 or less	Sodium Sulfide Colorimetric Assay
Total Plate Count (CFU/g)	3,000 or less	Standard Agar Plate Culture Method
Coliform Group	Negative	BGLB Method

【Safety】 (1)Acute oral toxicity test(mouse, female/male): LD₅₀ > 2,000mg/kg (2) Mutagenicity test: Negative

【Exmple of raw material description】 Cockscomb extract (containing hyaluronic acid) , citric acid

【Application】 Nutritional supplementary food (tablet, granule, beverage and others)

【Caution】 Some sediment might appear if mixed in beverage, due to influence of other ingredients.

【Analysis results】 (an example: Lot No. 150806)

Item	Analysis results (in 100g)	Item	Analysis results (in 100g)
Hyaluronic acid	6.4%	Energy	370kcal
Hydroxyproline	10.4%	Vegetable fiber	4.3g
Water	3.6g	Sodium	494mg
Protein	83.3g	Iron	2.38mg
Lipid	0.1g	Potassium	217mg
Ash	2.0g	Arsenic (as As ₂ O ₃)	Not detected
Carbohydrate	11.0g	Heavy metal(as Pb)	Not detected

Analysis) hyaluronic acid: Japan Association for Inspection and Investigation of Foods including Fats and Oils (public interest incorporated association) Others: Japan Food Research Laboratories (general incorporated association)

※3:Test method may be changed without prior notice in order to adopt advances in analytical technique.

○ We also provide OEM services for customers who are planning to develop new products or to improve products. Please feel free to contact us.

◇ Please note that the information on this brochure is meant to be used for the sale of raw materials, which can't be used for advertisement of generally released products.

To keep your skin healthy and make you beautiful from inside of your body.

Hylaro Collagen[®] peptide



L.S Corporation Co.,Ltd.

【Hyarocollagen® peptide】

Hyaluronic acid synthesis ability was compared 24 hours after giving Hyarocollagen® peptide and Hyarocollagen® each to three-dimensional human skin models (NB model ※1). The results show that Hyarocollagen® peptide is superior in promoting hyaluronic acid synthesis ability to Hyarocollagen®.

【Hyaluronic acid】

Hyaluronic acid is a component made from fibroblast, which is highly sticky and contains lots of water, filling all the space between cells. It can keep 6 l of water per gram which gives the skin moisture and keeps it fresh and youthful. In human body, hyaluronic acid constitutes cellular tissues in many parts including vitreous body, tendon, bone and skin.

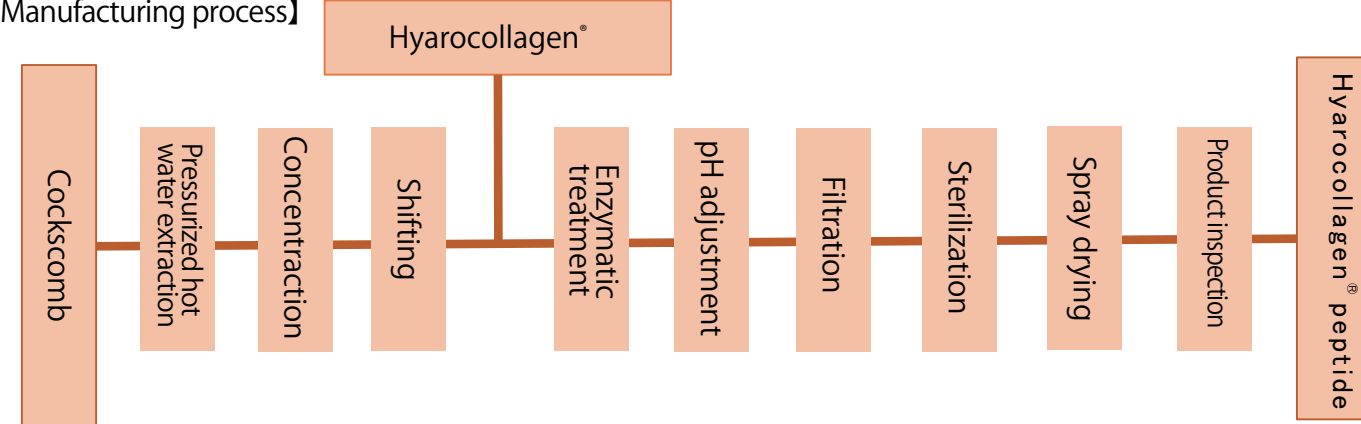
【Collagen】

Collagen is a kind of protein, accounting for 30% of all the protein of human body. Ordinary protein stays in a cell, while collagen exists outside a cell, working as a key to connect cells and to perform many other functions like supporting organs and etc.

【Hydroxyproline】

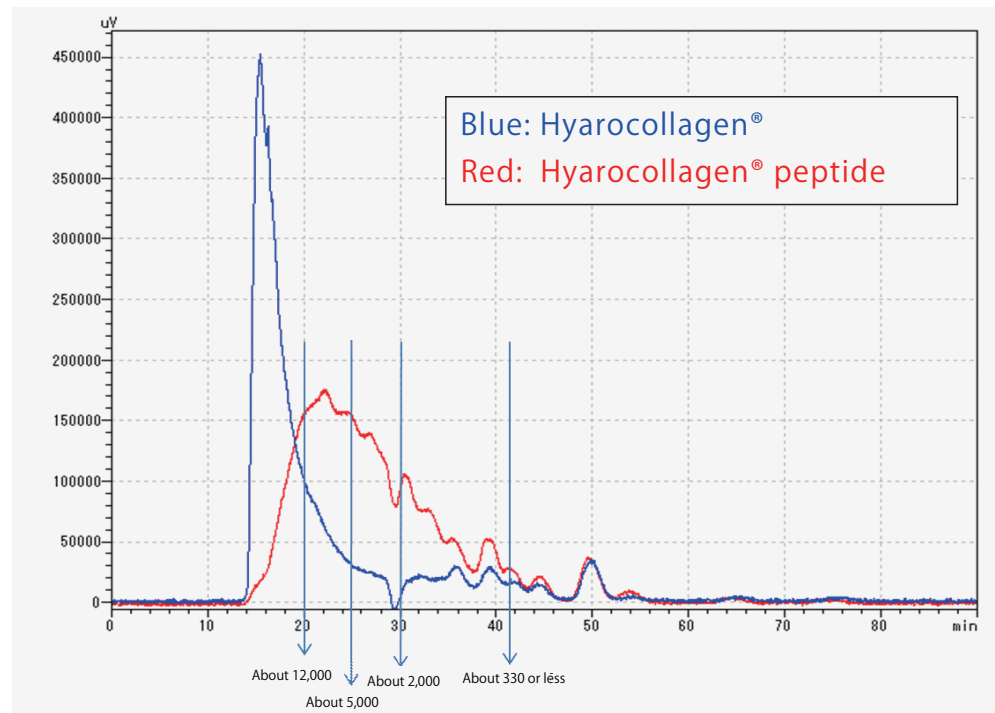
Hydroxyproline constitutes about 10% of all the amino acid in collagen. So it can be considered that hydroxyproline correlates with collagen content. (However, as the accurate percentage of Hydroxyproline in collagen varies depending on the type of collagen, there is no coefficient to figure out the exact amount of collagen out of the hydroxyproline content.)

【Manufacturing process】



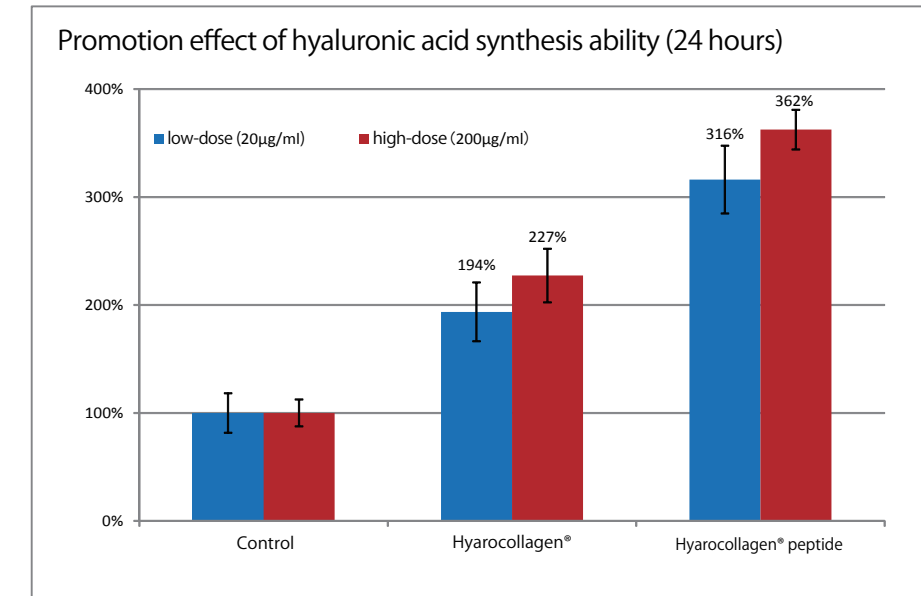
【Molecular weight, MW】

As average molecular weight of Hyarocollagen® peptide is about 4,500, lower than that of Hyarocollagen®, the internal absorption is expected to be more quick, promoting efficiency of utilization.



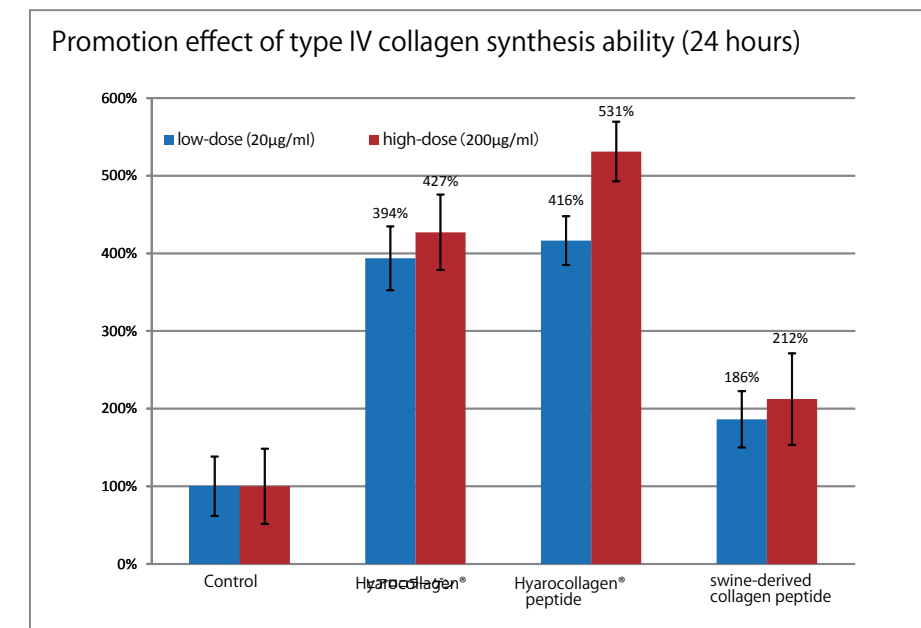
Analytical method) Gel filtration HPLC method Analyzer) Gene Trophology Institute

【Change of hyaluronic acid synthesis ability in three-dimensional human skin model (NB model ※1)】



The results show that Hyarocollagen® peptide is superior in promoting hyaluronic acid synthesis ability to Hyarocollagen®.

【Change of type IV collagen (※2) synthesis ability in three-dimensional human skin model (NB model ※1)】



The results show that Hyarocollagen® peptide is superior in promoting hyaluronic acid synthesis ability to hyarocollagen or swine-derived collagen peptide.

※1: NB model is *in vitro* three-dimensional human skin model produced from a cell sheet after being changed to the multi-layered by means of collagen gel culture method which has jointly been developed by Munakata lab in Hokkaido University and Nissei Bio Co., Ltd. Compared to other skin models, It can be regarded as closer to *in vivo* model.

※2: Type IV collagen is a main component of basement membrane placed between dermic layer and epidermal layer. The basement membrane is a foundation to support epidermal layer, playing an important role of smoothly delivering nutrition between these layers. (please see the right image)

