

●Product Name●

# Hyarō Collagen

## Character

- Japan-domestic chicken in use
- Hyaluronan > 5%, Collagen > 80%
- Hyarō Collagen restore a moisture to the skin.
- The Hyarō Collagen is 7 times the effects of the blend of hyaluronan and collagen.



## Nutritional component

Hyaluronan	5.86 g / 100g	Fat	0 g / 100 g
Collagen	80.8 g / 100g	Dietary fiber	5.5 g / 100 g
Water	5.4 g / 100g	Ash	2.7 g / 100 g
Energy	372 kcal / 100g	Carbohydrate (*3)	0 g / 100 g
Protein	93.1 g / 100g	Sodium	714 mg / 100 g

(\*3) Carbohydrate = 100 - (Water + Protein + Fat + Ash), in the case of carbohydrate below minus : 0

## Safety

Acute toxicity  
LD50 > 2,000mg/kg

Mutagenicity  
: Negative

Pesticide chemicals (450 items), drugs for animals and dietary additive (50 items)  
: Undetected

Patch test  
: bland

## Ingredient example

- Cockscomb extract (including collagen and hyaluronan)

## Reference daily intake

- 200 -1,000 mg / day

## Application

- Neutraceuticals (tablet, granule, drink etc)
- Cosmetics

## Labeling name for cosmetics

- Hydrized cockscomb extract

## Particle size

- 30 mesh pass / inches

## Packaging

- 1 kg × 6
- 3 kg × 2

## SPEC

Items	Specifications	Inspection methods
Appearance, Color	Light yellowish powder	Visual test
Odor, Taste	slightly characteristic	Sensory test
Hyaluronan	5.0% min.	HPLC method
Loss on dry	7.0% max.	Normal pressure 105°C 3 hours
Total nitrogen	10.0% max.	Kjerdahl method
Heavy Metal	20ppm max.	Sodium sulfide colorimetric assay
Arsenic	2ppm max.	Gutzeit's method
Virable bacterial count	$3 \times 10^3$ / g max.	Standard agar plate culture method
Coliform	Negative	BGLB method

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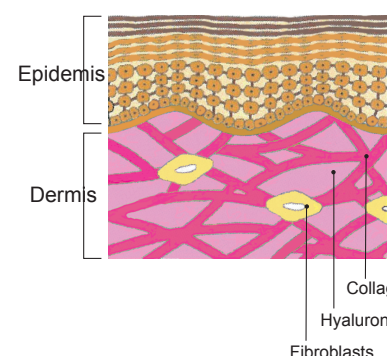
It has been widely accepted that cockscomb was much-prized foodstuff in China and France since last century. Noble ladies drank cockscomb soup expecting to have a beneficial effect such as moisturizing skin.

## Hyaro Collagen

Hyaro Collagen is the mixture of 5% of hyaluronan and 80% of collagen which extracted from Japan-domestic cockscomb by unique manufacturing method. Because it avoids the use of enzymes in the processes, Hyaro Collagen is natural forms of collagen and hyaluronan. In addition to domestic and natural product, it is noted that Hyaro Collagen possesses higher water-holding ability as compared with the conventional blend of hyaluronan



### Structures in the skin



### Hyaluronan

Hyaluronan is sticky component which biosynthesized for maintaining intracellular moisture by fibroblasts. Since it is known that hyaluronan is water-retaining agent – 1g of hyaluronan can absorb approximately 6L of water, that is, it helps to keep moisture of skin and cell. Hyaluronan exists in the tissues that distribute vitreous body, tendon, bone, and skin.

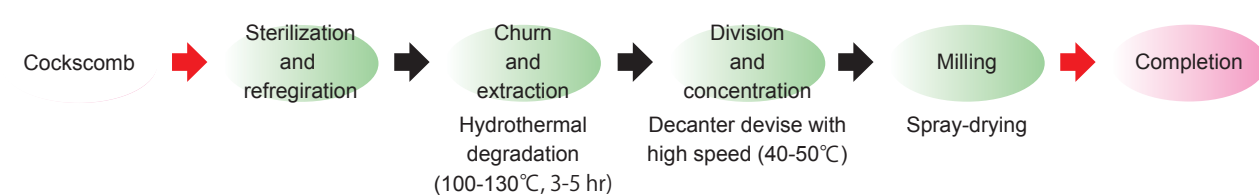
### Collagen

Collagen is a type of protein which contains 30% of all protein of the animal body. As usual protein exist in intracellular area of the body, collagen present in extracellular area which found in fibrous tissues such as tendon and skin, and also abundantly in bone. Recently it is worth noting that collagen played a role in keeping skin tone and firmness. The fibroblast is the main cell which produces collagen.



Hyaro-collagen bulk powder

### Manufacturing process



### Molecular weight (M. W.)

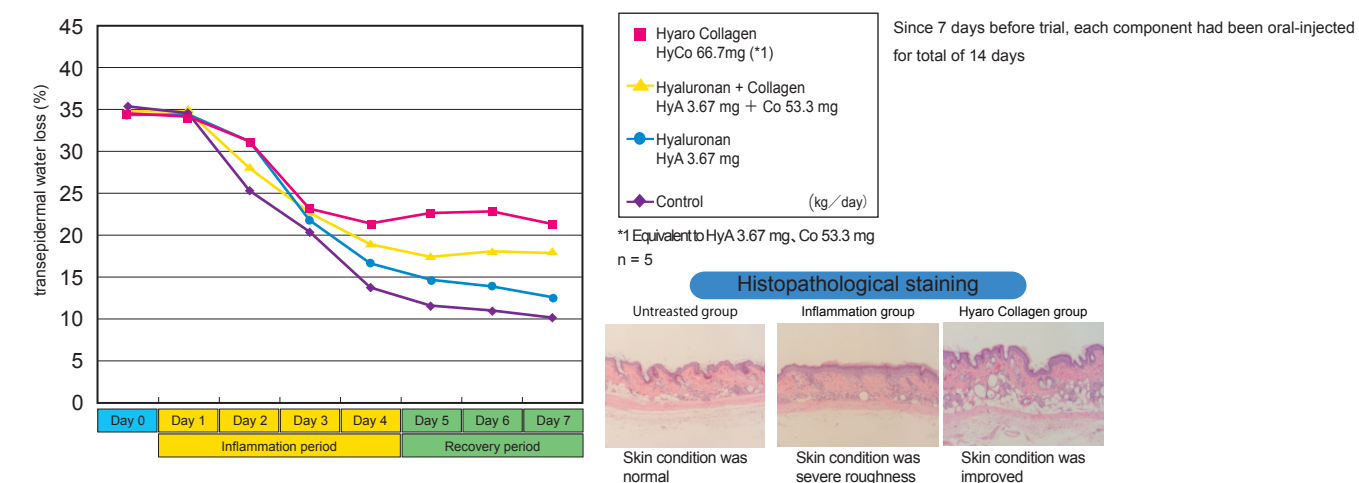
M. W. of Hyaro Collagen is from 3, 000 to 30, 000 mainly. The most part of hyaluronan in Hyaro Collagen exists from 100,000 to 600,000.

### Result : The distribution of Hyaro Collagen in M. W.

Range of M.W.	Distribution of M.W.
> 1,000,000	Trace
300,000 ~ 1,000,000	2
100,000 ~ 300,000	3
30,000 ~ 100,000	9
10,000 ~ 30,000	29
3,000 ~ 10,000	32
1,000 ~ 3,000	14
1,000 <	11
<b>Total</b>	<b>100</b>

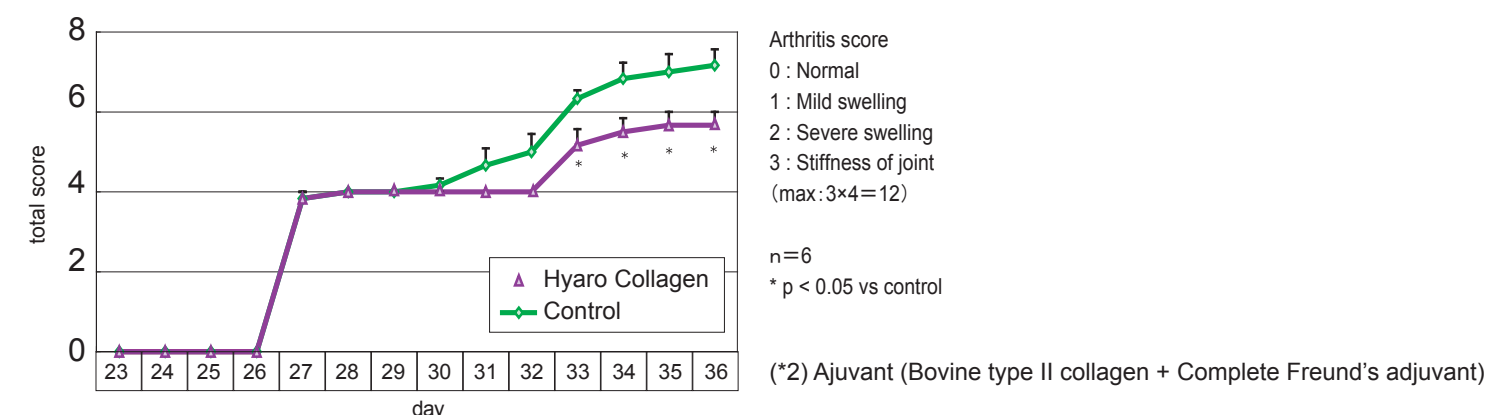
## Preventing skin roughness

Hairless mice which induced rough surface were fed Hyaro Collagen for 7 days. Hyaro Collagen improved transepidermal water loss as compared with the others (the blend of hyaluronan + collagen, hyaluronan, and collagen). Moreover, histopathological analysis revealed that Hyaro Collagen decreased the skin thickening and also regenerated epidermis. This data suggest that Hyaro Collagen keep the skin surface in good condition.



## Preventing arthritis

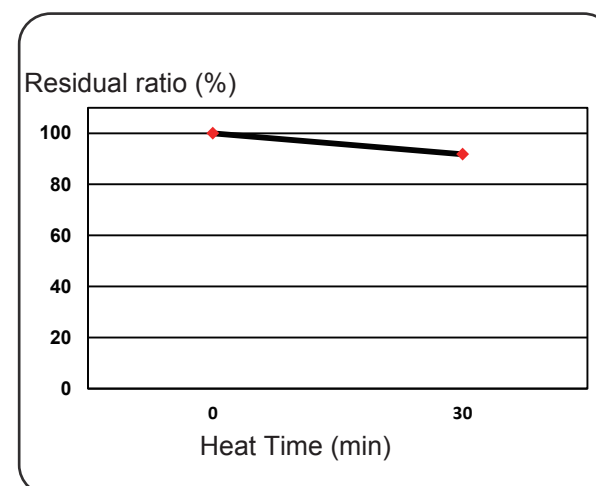
Hyaro Collagen (33.3 mg/kg) was administrated orally for 35 days. In day 0 and 21, DBA/1J strain mice were injected intradermally with adjuvant (\*2) for induction of arthritis. Oral feeding of Hyaro Collagen significantly suppressed the inflammation in joint.



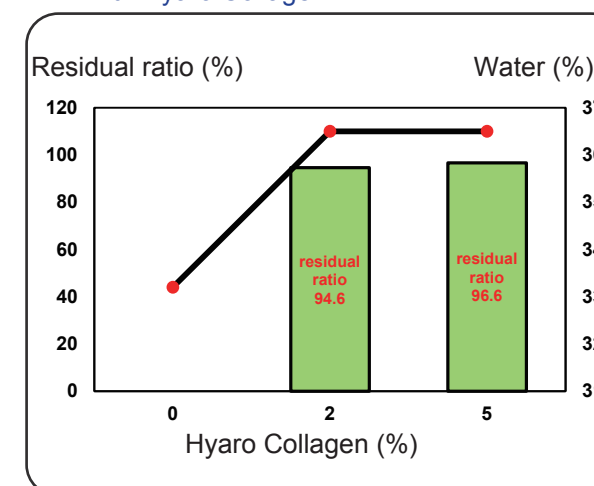
## Thermal stability test

We investigated whether Hyaro Collagen has the heat stability in the case of food applications. We made a bread containing Hyaro Collagen to check a heat stability, persistability, water-holding ability of Hyaro Collagen. The results showed this bread contains over 90 % hyaluronan and has moist feeling in texture.

### I. Thermal stability of Hyaro Collagen



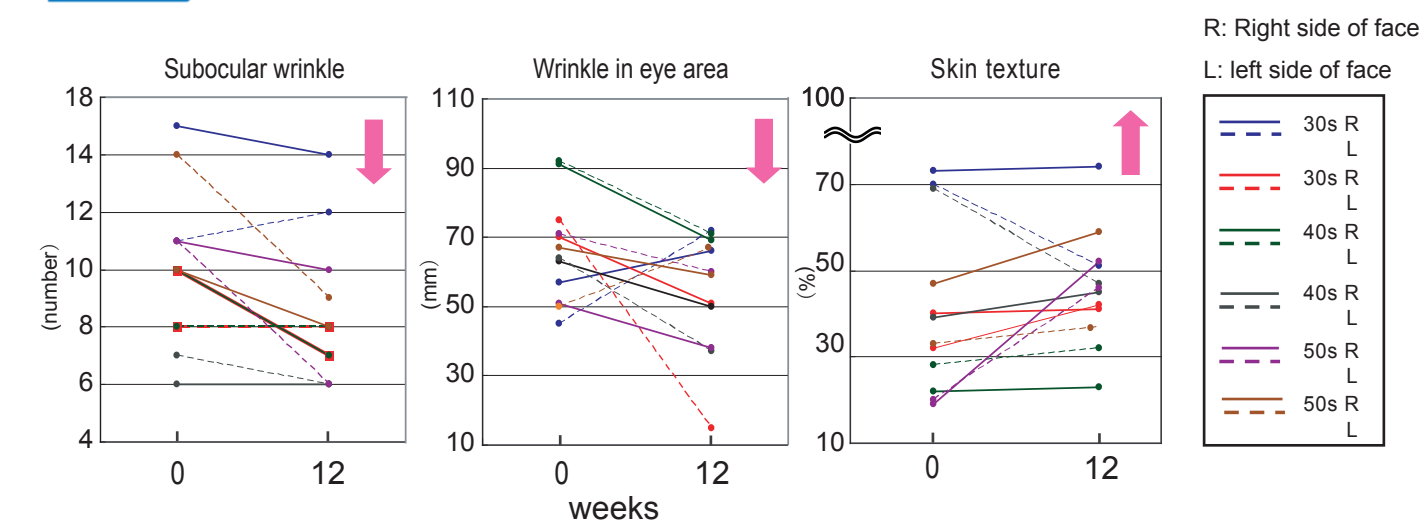
### II. Persistability and water-folding ability of bread with Hyaro Collagen



## Effect of Hyaro Collagen on human skin (clinical trial)

Six women volunteers, age 30 to 59, were instructed to take in Hyaro Collagen (600 mg/day) for 3 months (August to November). Before and after trial, we evaluated the condition in wrinkle of eye area and under eyes, and skin texture by dermatologist. Analysis with Robo Skin Analyzer System (Inforward. inc) revealed that five women (within six women) improved the skin conditions as data below.

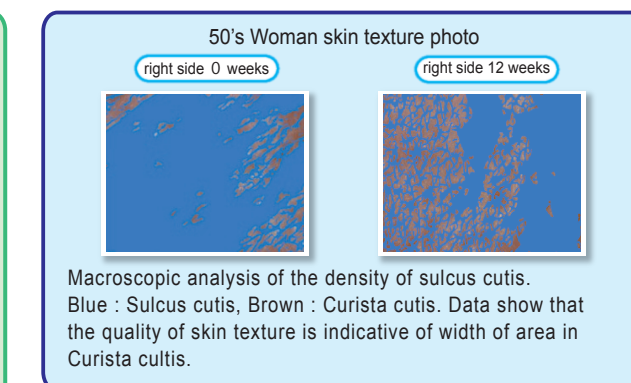
### Results



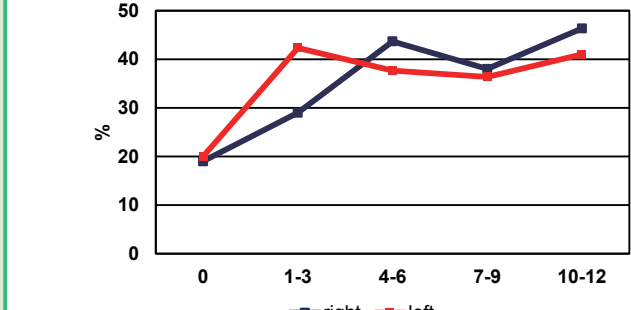
### 30's Woman Hyaro Collagen 600mg/day, oral intake



### 50's Woman Hyaro Collagen 600mg/day, oral intake



### 50's Woman skin texture



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