



# Linking Glycoscience and health longevity

**MARUKYOU BIO FOODS Co.**

# Nano Type Chondroitin

Food safety

# Food safety of chondroitin sulfate oligosaccharides

## Bridging Glycobiology and Healthy Longevity

### ■ Ingredients

The raw material, chondroitin sulfate, is extracted from the cartilage of skates, which are natural fish from Hokkaido.

Therefore, they are not affected by antibiotics or artificial feed.

Skates from Hokkaido have a long history of being eaten. They are commonly sold in food supermarkets and fresh fish shops.



# Food safety of chondroitin sulfate oligosaccharides

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## ■ Manufacturing Method

The high-molecular-weight chondroitin sulfate extracted from skate cartilage is reduced to a low molecular weight using a patented microchemical process.

This process involves hydrolysis using high-temperature, high-pressure subcritical water, so it is possible to sterilize all bacteria, including heat-resistant spores.

The subsequent purification and powdering processes are carried out in a sealed space, so it is possible to manufacture an extremely safe product.

These processes are carried out in a GMP-certified factory.

Each lot of product is inspected to ensure that it conforms to quality control standards.

Since its launch in 2013, we have shipped more than several hundred kilograms of chondroitin sulfate oligosaccharide, but there have been no reports of health problems or adverse events.



# Manufacturing process

No.	Process
1	raw materials(Fish cartilage)
2	enzyme treatment
3	clarifying filtration
4	ultra filtration
5	heat sterilization
6	subcritical water treatment
7	concentration with ultrafiltration
8	activated carbon treatment
9	spray drying
10	classification
11	metal inspection
12	measurement and packing

This product is manufactured in accordance with the health food raw materials GMP of the Japan Health and Nutrition Food Association.





# Safety of chondroitin sulfate oligosaccharides

items	Analysis Test Results
Total number of bacteria	3,000cfu/g or less
Coliform bacteria	Negative
Mold count	Negative
Yeast count	Negative
Number of heat-resistant spores	300cfu/g or less
Acute oral toxicity after a single dose	2,000m g / k g or more
Repeated dose toxicity test for 28 days	Less than 1,000mg/ k g
Mutagenicity (Ames TEST)	Negative
Human intervention study	(1) UMIN000023492: No abnormalities at 100mg/day/man/8week (2) UMIN000052732: No abnormalities at 100mg/day/man/12week
Cytotoxicity test(bioluminescence method)	Negative

# Product Specifications

Item	Result	method
Appearance	White to beige powder	Visual
Chondroitin Sulfate Assay	Minimum 80.0%	HPLC method
Weight - average molecular weight (Mw)	3000 or less	HPLC method
Moisture	Maximum 10.0%	Infrared moisture meter
pH (1% solution)	3.0 - 5.0	Glass electrode
Heavy metal (as Pb)	Maximum 10ppm	Sodium sulfide colorimetric method
Viable bacteria Count	Maximum 3,000 cfu/g	Standard agar plate culture method
Escherichia coli	Not detected	BGLB method
Granularity	30 mesh pass	Sieve separation

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## **CONTACT US**

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## **Fine Chemical Laboratory**

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