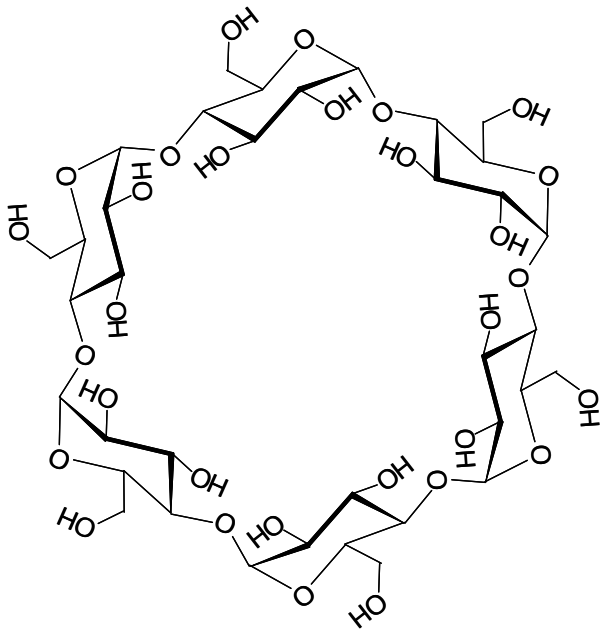
Prebiotics Collagen peptide

SUPER α-Oligo Collagen FG(Granule)

- Fish collagen peptide and α-Oligosaccharide Granule -



CycloChem Bio Co., Ltd. 7-4-5, Minatojima-minamimachi, Chuo-ku, Kobe, 650-0047 Tel.+81-78-302-7073 Fax.+81-78-302-7220 URL:http://www.cyclochem.com/cyclochembio

About Fish Collagen peptide

Collagen is…

a fibrous protein which can be found at dermis (Skin), ligament (fibrous connective tissue) and cartilage (flexible connective tissue), holding around 30% of the protein in our bodies.

Collagen peptide is a soluble hydrolysate produces by further hydrolysis of gelatin from such as fish, which is easily absorbed comparing collagen.

It is reported that Fish collagen peptide can promote collagen production in our bodies and bring beauty skin effect.

- Effect of maintaining skin elasticity （Functional display　5 g/day[*1]）
- Effect of protecting skin from UV stimulation （Functional display　5 g/day[*2]）

Source：

*1 Sangsuwan et al., J. Dermatolog. Treat., 32(8), 991-996 (2021)

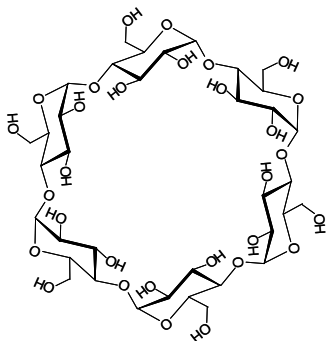
*2 Koyama et al., 薬理と治療, 42(10), 781-790 (2014)

Solution on the problem of fish collagen peptide by utilizing α-Oligosaccharide

Problem of fish collagen peptide

- Fish taste and odour
- High hygroscopicity as a common property of peptide
- Putrid substances which can cause health trouble such as rough skin and body odor in our intestine is easily produced
- Recognized “commodity” in the market (new additional value in replace of di-peptide and tri-peptide)

Newly developed collagen by using α-oligosaccharide to solve the problems

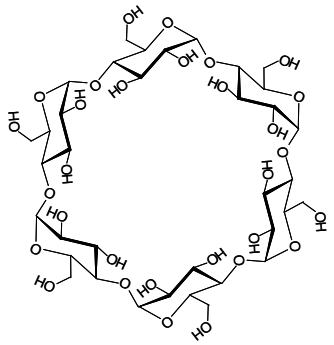


α-oligosaccharide

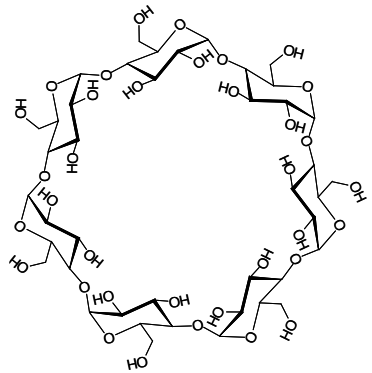
- Improvement of smell and taste
- Prevention of humidity absorption
- Restriction of putrid substances production
- New functional value addition

Cyclic oligosaccharide and α-oligosaccharide

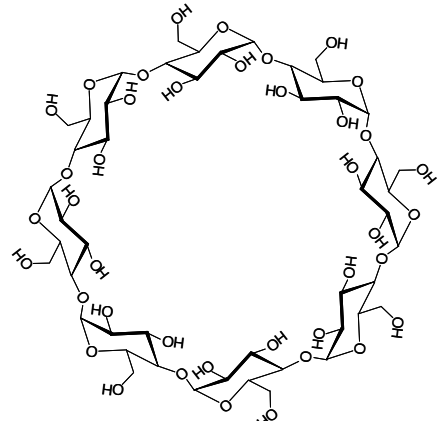
Cyclic oligosaccharide is a circularly connected molecule depending on the number of linkage



α-Oligosaccharide
6 glucoses connected



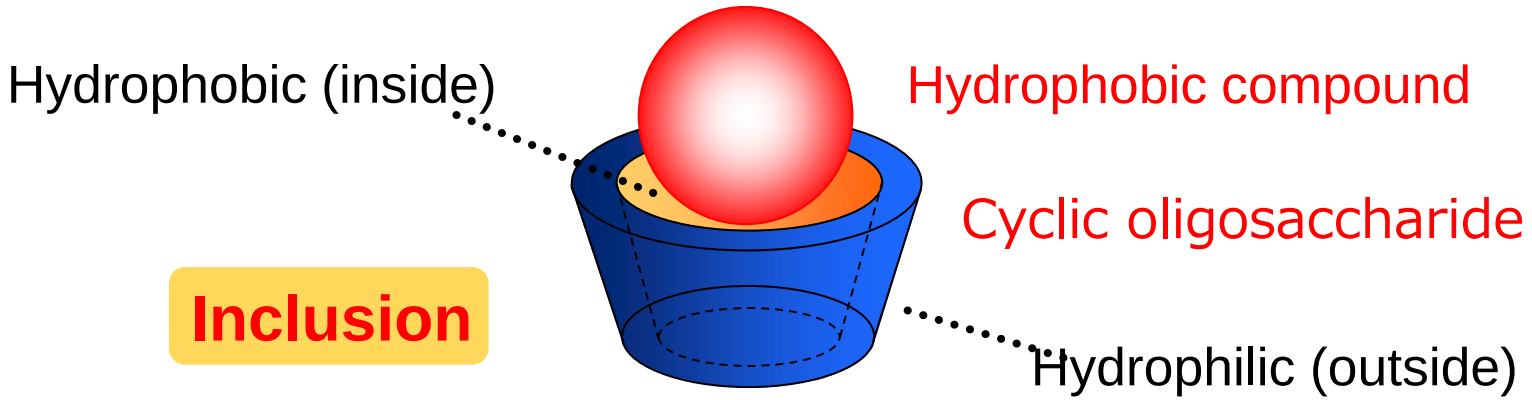
β-Oligosaccharide
7 glucoses connected



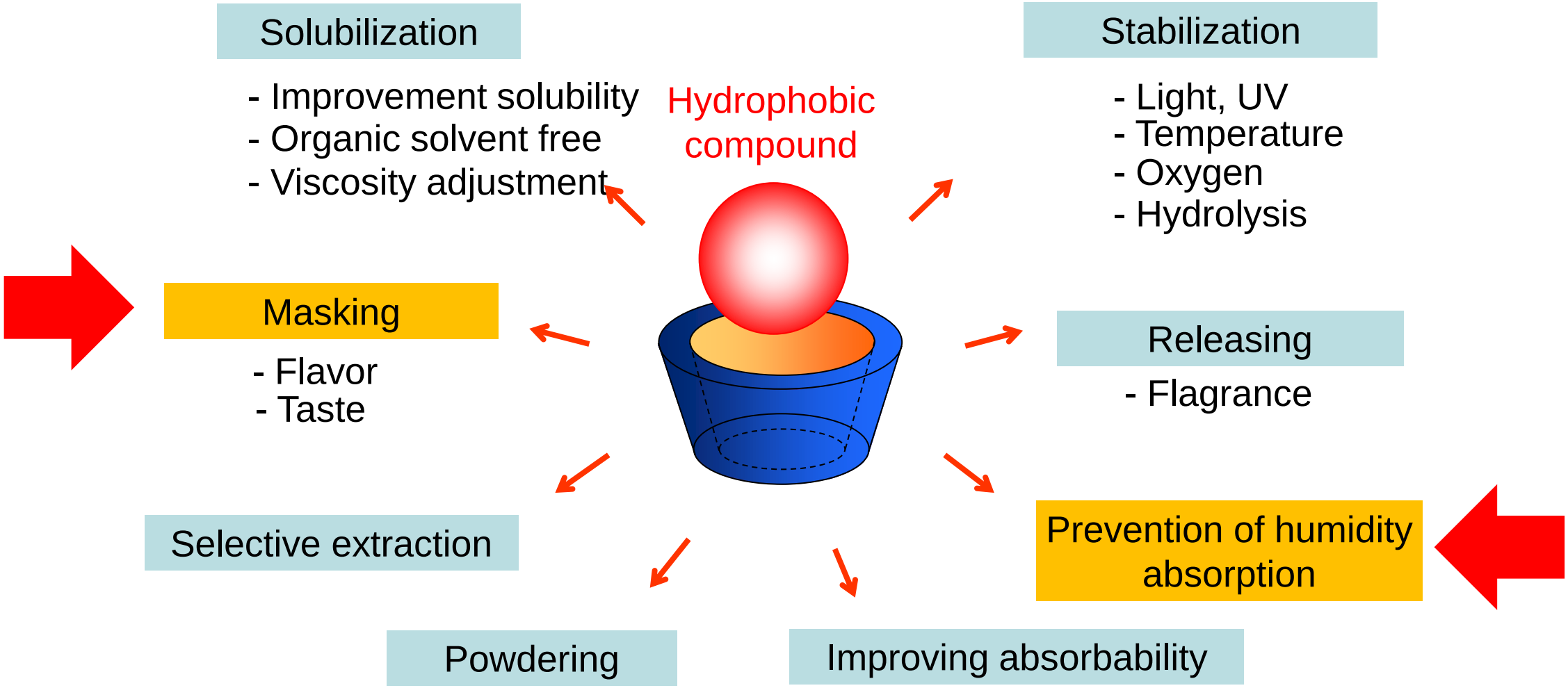
γ-Oligosaccharide
8 glucoses connected

Characteristics of Cyclic oligosaccharide

Cyclic structure is hydrophobic, and can hold the molecular in its internal hollow, namely “inclusion function”



Application of Cyclic oligosaccharide
~Improving property by inclusion function~

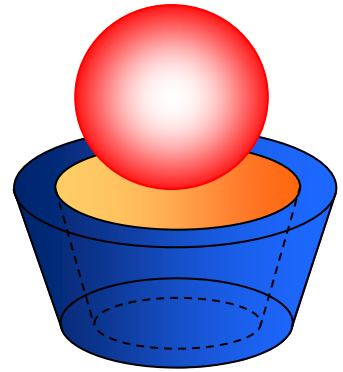


Improvement of taste and Flavor by α-oligosaccharide

α-oligosaccharide performs as taste and flavor improver by inclusion of smell and bitter taste of amino acid.

α-oligosaccharide is more suitable for inclusion due to its hollow size, rather than Cyclic oligosaccharides.

Smell and bitter taste



α-oligosaccharide

Improvement of smell and taste of fish collagen peptide by using α-oligosaccharide

Patent application

1g/50ml water of Compound of fish collagen peptide and α-oligosaccharide (N=10)

Good taste without smell： 3
Improved taste without smell : 2
No change of taste with improved smell : 1
No change： 0

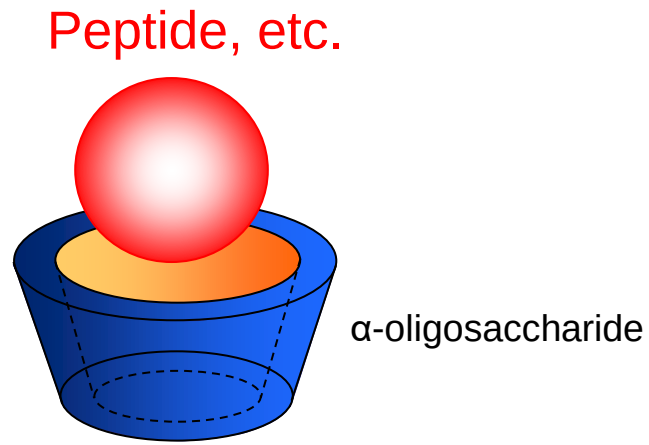
（Collagen peptide : α-oligosaccharide）	Average
8:0	0
8:1	1.5
8:2	2.4
8:4	2.7

In the test, smell and taste of fish collagen peptide by using α-oligosaccharide were imroved

Prevention of humidity absorption by α-oligosaccharide

α-oligosaccharide can prevent humidity absorption by inclusion of a part of amino acid and peptide.

α-oligosaccharide is more suitable for inclusion due to its hollow size, rather than Cyclic oligosaccharides.

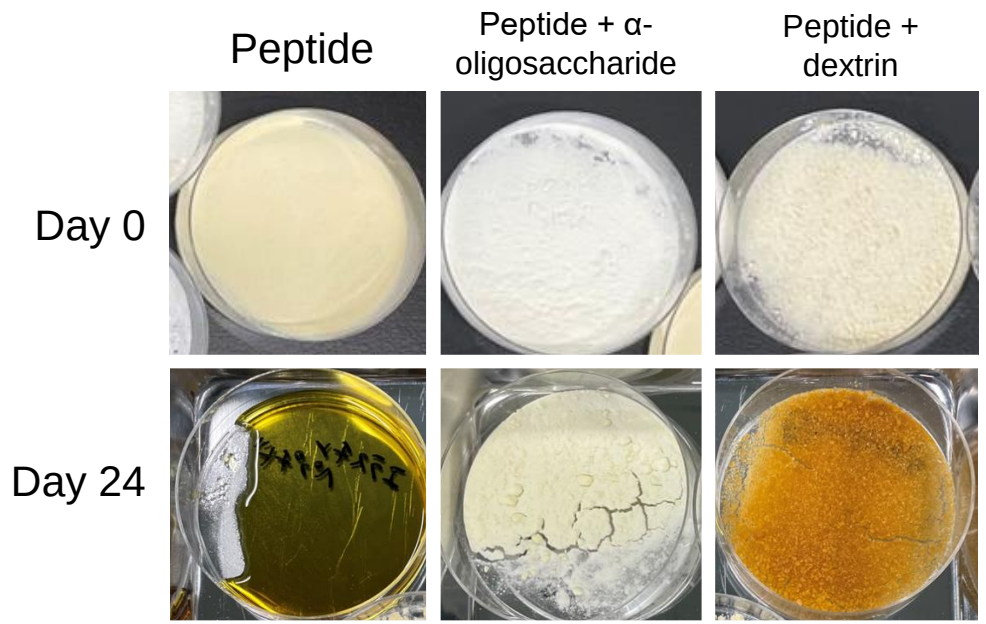


Prevention of humidity absorption of elastin peptide by using α-oligosaccharide

Evaluated influence on prevention of humidity absorption by using elastin peptide and α-oligosaccharide.

Temperature 40℃、relative humidity 75%, kept for 24 days

In the test, α-oligosaccharide could restrict humidity absorption of peptide, which dextrin allowed peptide to absorb humidity and caused aggregation.



α-oligosaccharide as Prebiotics

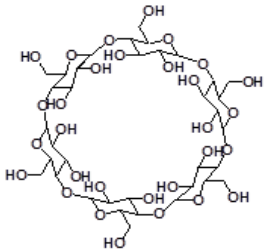
α-oligosaccharide is a prebiotics material which is safe, indigestible and fermentable (decomposed by intestinal bacteria), not just as inclusion agent.

	Number of glucose	Solubility	Digestivility (in digestive tract)	Permitted amount limitation / day
α-Oligosaccharide	6	○	×	-
β-Oligosaccharide	7	△	×	Limited
γ-Oligosaccharide	8	○	○	-

*JECFA（FAO/WHO合同食品添加物専門家会議）にて評価

Restriction of intestinal putrid substances production by α-oligosaccharide

Intake of α-oligosaccharide brings health benefits such as intestinal environment improvement by promoting short-chain fatty acid production because it can be a nutritional source for butyrate-producing bacteria, lactic acid bacteria and bacteroides in our intestine.



α-oligosaccharide

butyrate-producing bacteria
lactic acid bacteria
bacteroides

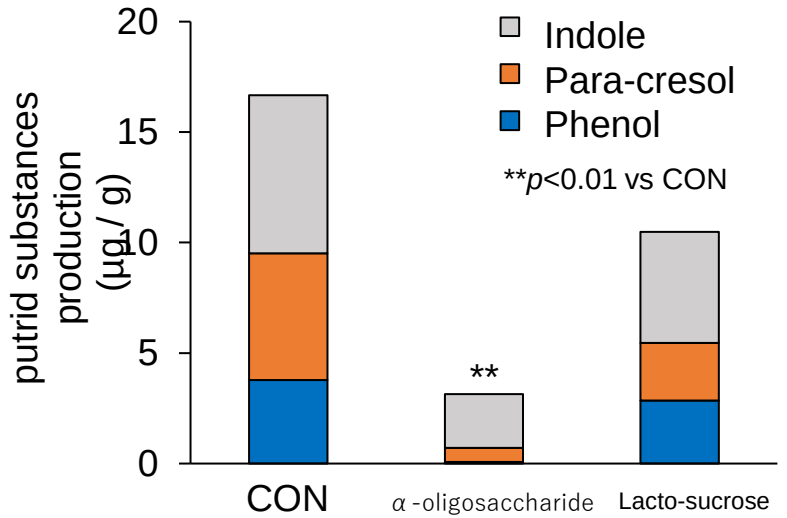
short-chain fatty acid production
- Acetic acid acid
- Butyric acid
- Lactic acid
- Propionic acid

- Intestinal environment improvement
- Improving constipation
- Against obesity
- Against allergy
- Against Arteriosclerosis, etc.
- Calcium absorption promotion & improvement of bone health
- Promoting production of Intestinal track barrier functions
- **Restriction of intestinal putrid substances**

Restriction of intestinal putrid substances production by α-oligosaccharide

Protein partly turns into putrid substances (indole, para-cresol, phenol) which causes health problems such as rough skin and body odor by harmful bacteria.

It is proved that α-oligosaccharide can restrict these putrid substances production more than probiotics material, lacto-sucrose, in animal test.

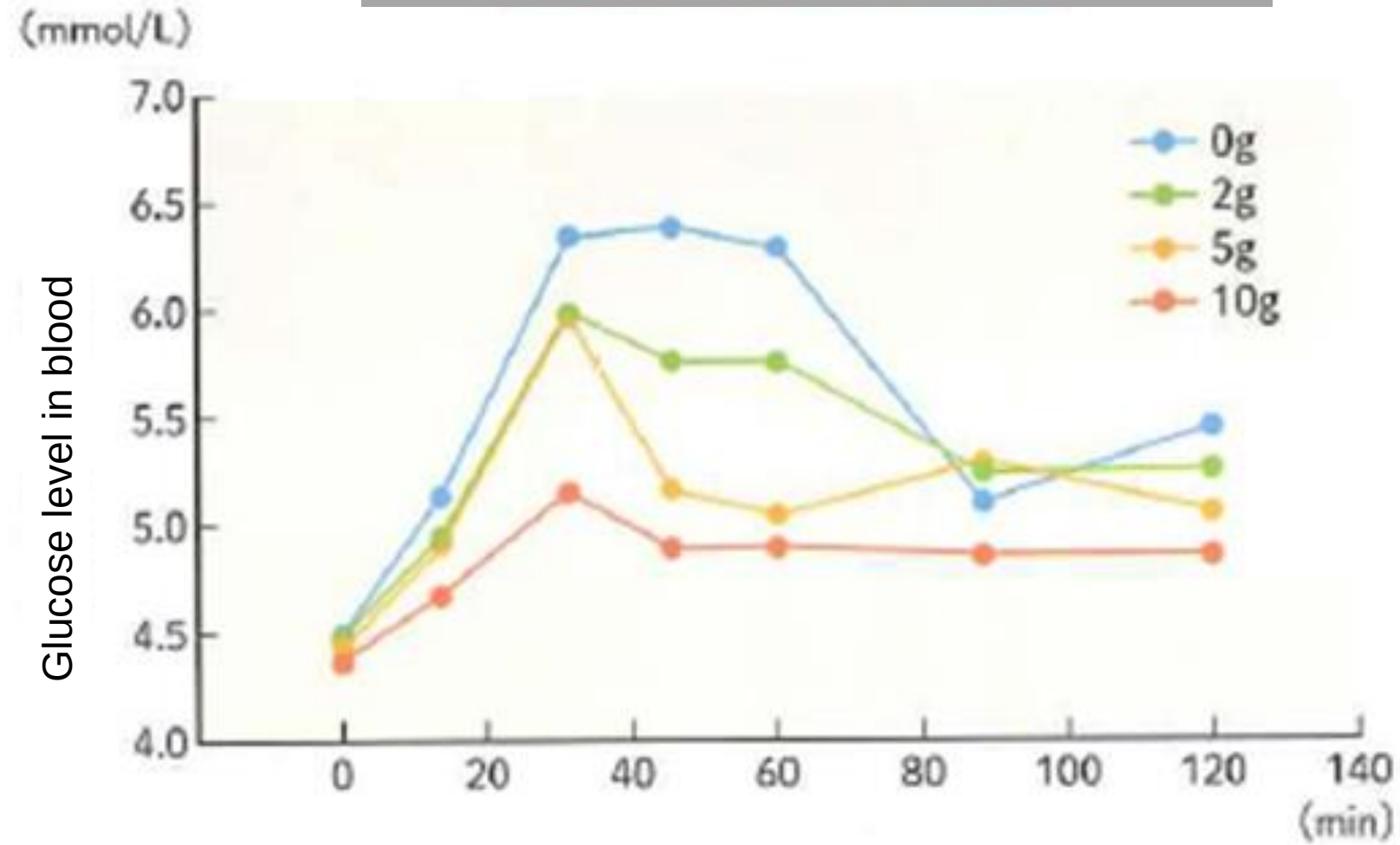


引用元：K. Chikamoto, K. Terao, *Functionality of Cyclodextrins in Encapsulation for Food Applications*, Springer, Cham. 255 (2021)

Functional performance of α-oligosaccharide （1）

Restriction of blood sugar level

Change of glucose level in blood

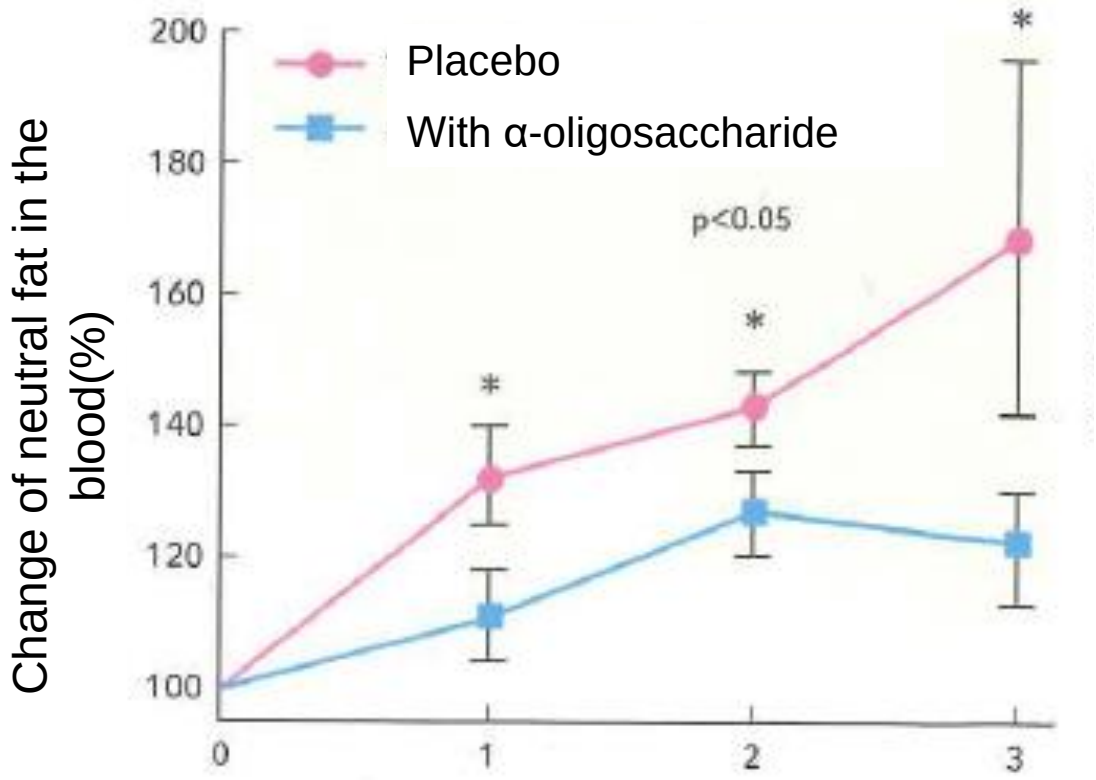


Time after α-oligosaccharide intake

Functional performance of α-oligosaccharide （2）

Restriction of increase of neutral fat in the blood after meal

Restriction of increase of neutral fat in the blood after meal



Time after meal and α-oligosaccharide intake

P. A. Jarosz et al., Metabolism, 62(10), 1443(2013)より改変

Comparing placebo and 2g intake of α-oligosaccharide revealed that α-oligosaccharide can restrict the increase of neutral fat in blood

Summary：

SUPER α-Oligo Collagen can offer new and only-one value!

【Raw material】

Selected high quality

【Production (made in Japan)】

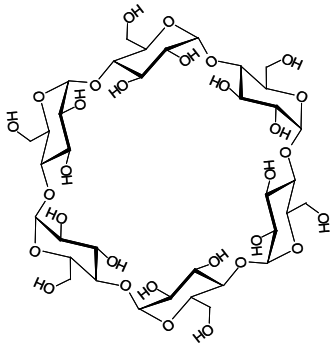
SUPER αOLIGO COLLAGEN FG
（Trademark and patent application）

【Expected effect】

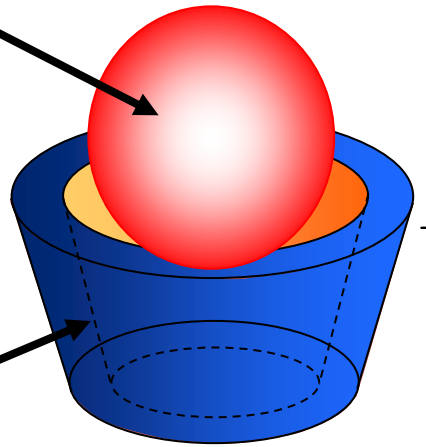
Only-one value as new collagen

Fish collagen peptide

α-oligosaccharide



Inclusion & Granulation



- **Improvement of smell and taste**
- **Prevention of humidity absorption**
- **Restriction of putrid substances production**
- **New functional value addition**

Product Information

Item	Description
Product name	SUPER α-OLIGO COLLAGEN FG
Brand	Japan Tuna Bait
Origin	Japan
Raw material	Fish collagen NT-B (Brand : Japan Tuna Bait)
	α-oligosaccharide (Brand : CycloChemBio)
Package	10kg/carton
Appearance	White granule
Shelf-life	3 years after production