



Healthcare Business Briefing

30 August 2022

This document is an English translation of a statement written originally in Japanese for reference. The Japanese original should be considered as the primary version

Daicel's Business Segment

FY2022 Net Sales Total

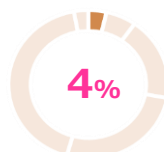
467.9 bn-yen

Major Products

Japan's market
share No.1

World's market
share No.1

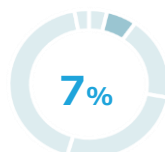
Medical /
Healthcare



Cosmetics ingredients such as **1,3-butylene glycol** and polyglycerin
Naturally derived ingredients such as equol and Konjac ceramide
Chiral columns, High-purity chiral reagents,
Co-processed excipients such as orally disintegrating tablets



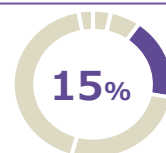
Smart



Tri-acetate cellulose(TAC) for optical films, High-performance optical films
Photoresist materials, **Solvents for electronic materials**,
Optical lens, Printed electronics materials, Organic semiconductor device



Safety



Airbag inflators for Automobiles,
micro gas generators, pyro-fuses



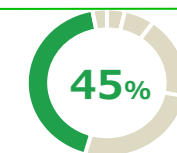
Materials



Acetic acid, Acetic acid derivatives(acetic anhydride ,common solvents)
Cellulose acetate
Acetate tow, Organic chemicals such as Alicyclic-epoxy-resin,
Caprolactone derivatives



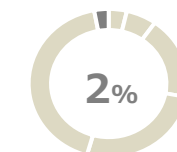
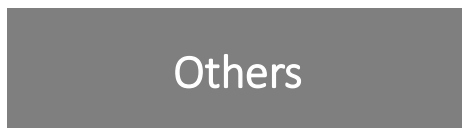
Engineering
Plastics



Engineering plastics such as **POM**, PBT, PPS, **LCP**, COC
Plastics processing products such as
Coating films and packaging container, Water-soluble polymer










Others



Membrane separation systems
Defense-related products



BU	Classification		Major Products	
Cosmetics BU	Cosmetic materials	Moisturizing intergradient	1,3-Butylene glycol (1, 3 BG) Polyglycerin derivative	
		Surfactant	Polyglycerol esters Polyglycerin ethers	
		Texture improver	BELLOCEA™ (spherical fine particles of cellulose acetate derived from cellulose)	
Health food BU	Functional food material	Intestinal metabolites	Flavocell™ (Equol) URORICH™ (UrolithinA)	
		Others	Ceramide derived from konjac root S-allylcysteine	
	Mail order	Supplements	Soy fermented extract supplements Ceramide Supplements	
		Cosmetics	All-in-one gel Face mask	



Medical/Healthcare Segment Sales and Profit Trends (FY2019/3 to 2026/3)

- ◆ Despite stagnation and decline in FY2020/3 and 2021/3 due to the impact of COVID-19, recovery trend from FY2022/3
- ◆ Depreciation burden increased due to the launch of new facilities in the cosmetics business in FY2021/3
- ◆ Regarding the figures in the medium-term plan, since assumptions such as market conditions, trends in raw materials and exchange rates, and the timing of the start-up of new facilities have changed significantly from the time they were first formulated, we plan to revise them during the end of the fiscal year ending March 31, 2023.

(Billion yen)

■ Sale □ Operating income (Billion yen)

40

20

0

'19/3

'20/3

'21/3

'22/3

'23/3

forecast

'24/3

mid-term
management
plan

'25/3

mid-term
management
plan

'26/3

mid-term
management
plan

Covid-19

- 1,3BG new plant operation
- Expansion of sustainable material lineup
- Expansion of intestinal flora products

※Operating income before reviewing the method of allocating corporate expenses

Cosmetics materials

Next Generation

Market growth
Prospect

Cosmetics(Asia)
CAGR **5%**

Strength

- Tow 1,3-BG production bases → A stable supply/
World's highest quality
- Solid sales network in the Asian region

Policy

- Enhance sustainable material lineup
- Expand market share of existing products

Concrete measures

Up to FY2022

Up to FY2025

New 1,3BG plant(Aboshi Plant) starts operation → Increase market share by taking advantage of stable supply and quality

Enhance product lineup through collaborations inside and outside the Daicel Group as well as M&A.
Put BELLOCEA™ (spherical fine particles) onto the market and expand business.

Health foods

Next Generation

Market growth
Prospect

Health food raw materials (Japan)
CAGR **5%**

Strength

- Bio(microbial)fermentation technology

Policy

- EQUOL sale expansion
- Expand a lineup of intestinal microbiome products

Concrete measures

Up to FY2022

Up to FY2025

Increase EQUOL production / Provide total solution with intestine as a starting point

Enhance intestinal flora material lineup / Collaborate with strategic partners(e.g. Cykinso, Inc.) and promote M&A

1,3-Butylene glycol (1, 3 BG)

Function : Moisturizing effect, antibacterial effect

Use : General skin care such as lotion, milky lotion, sheet mask

Extraction solvent for natural extracts



○Strength

- World's No. 1 quality (odorless grade)
- Stable supply system with two bases
 - ✓ Ohtake Plant
 - ✓ Aboshi Plant (New plant to start operation in 2022)



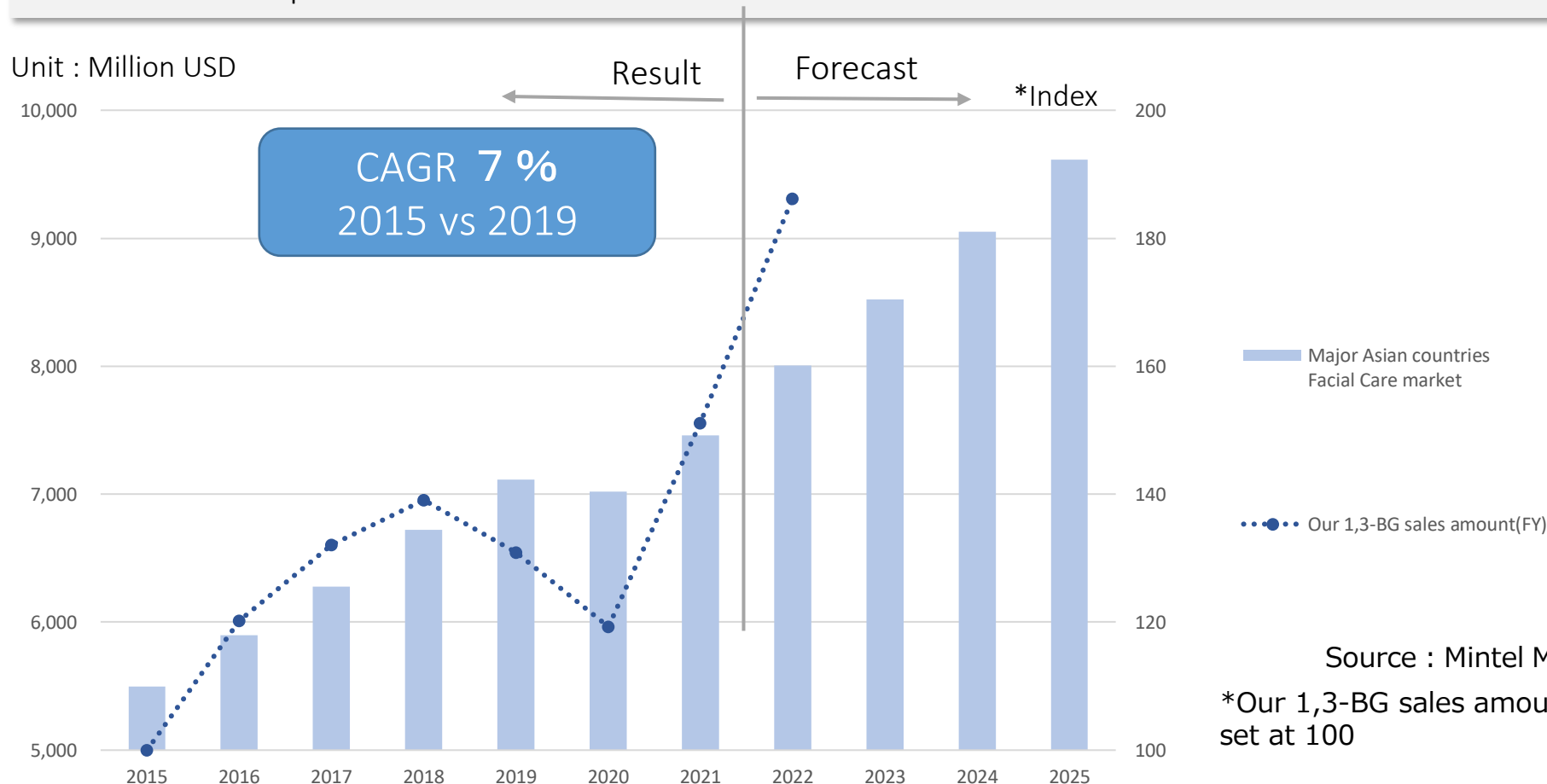
○ business situation

- More than 50% market share in Japan centered on odorless grade
- Have a long track record of dealing with major customers not only in Japan but also globally



Trend in the cosmetics market

- ◆ Mainly in China and other Asian regions, the cosmetics market continues to expand due to population growth and rising incomes.
- ◆ Due to COVID-19, the market has temporarily shrunk. On the other hand, it is assumed that the market will continue to grow due to the above background.
- ◆ For 1,3-BG, we plan to enter the market with major manufacturers through the operation of the new plant, and work to further expand sales in overseas markets.

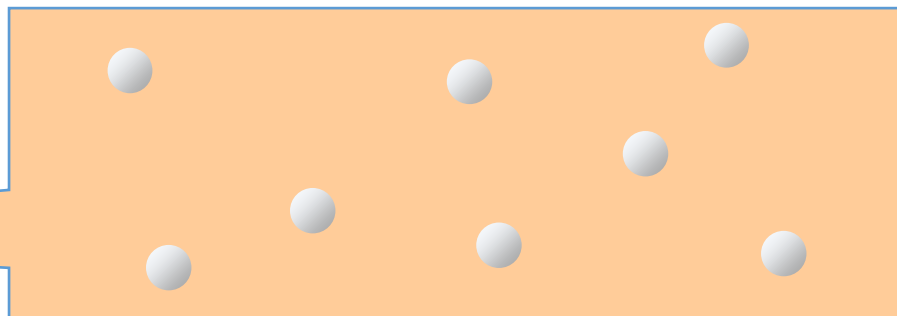


Source : Mintel Market Size
*Our 1,3-BG sales amount: FY2015 set at 100

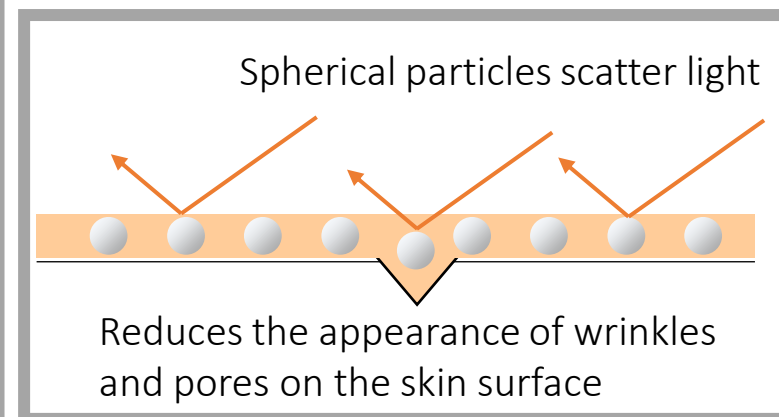
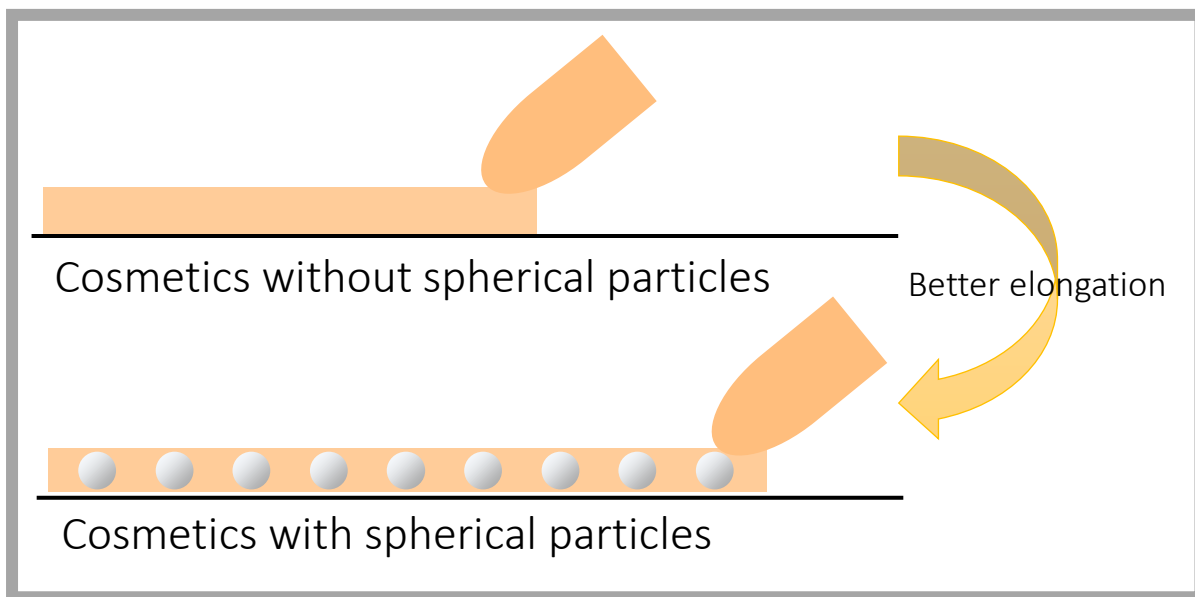


Spherical particles used in cosmetics

Function : Providing elongation and light diffusion
Use : foundation, sunscreen, etc.



Spherical particles used in cosmetics





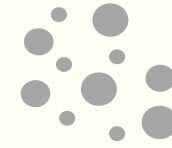
Needs for cosmetic materials that do not pollute the ocean

Is your usual make-up polluting the ocean? The relationship between the “microplastic problem” and cosmetics



Cosmetics

Microplastics such as nylon particles and acrylic particles are used as spherical particles.



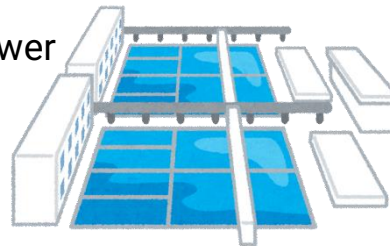
Microplastics

Generic name for plastics of 5 mm or less
Particles of several μm to several hundred μm are used in cosmetics.



Remove makeup

flushed down the sewer



Not captured in sewage treatment



It pollutes the ocean!

Cosmetics containing microplastics are being regulated worldwide



There is a demand for cosmetic materials that do not pollute the sea

- ◆ BELLOCEA™ is a naturally derived and biodegradable material
- ◆ Although it is a natural material, it features a smooth texture that is comparable to conventional synthetic fine particles.

Eco Friendly
~ Nature-returning material ~



Elongation comparison
~ Liquid foundation prescription ~

BELLOCEA™

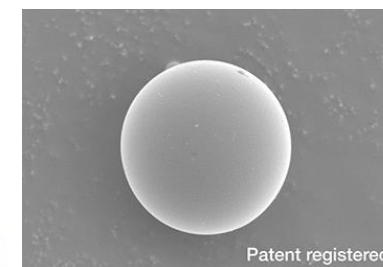
Nylon

Acrylic

Silica



BELLOCEA™



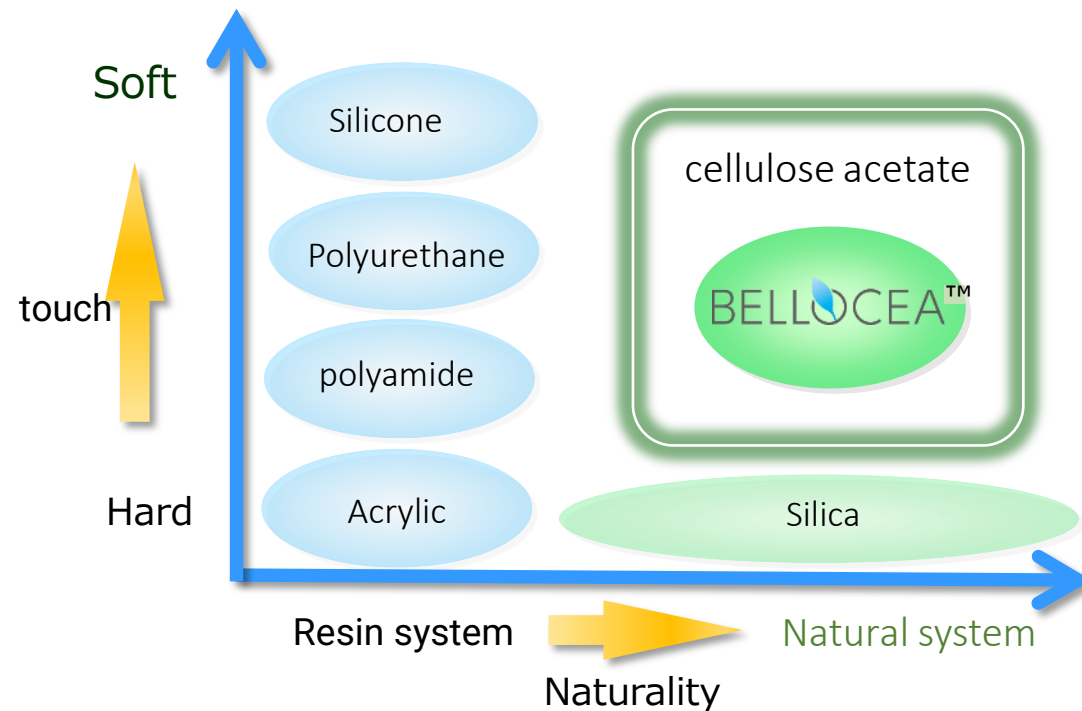
Function

- Gentle to humans and the environment
- Spherical particles (Smooth surface)
- Smooth texture
- Good spreadability and dispersibility
- Provides light-diffusivity
- Average particle diameter 7μm

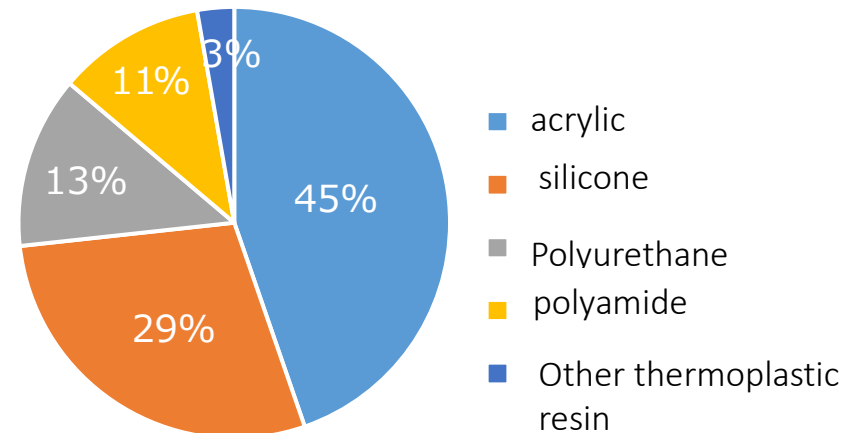
Improved biodegradability grade (OECD 301F certified) under development

- ◆ BELLOCEA™ combines natural materials with functionality such as softness and smoothness.
- ◆ Aiming to replace polyurethane and polyamide

BELLOCEA™
market position



Amount of microplastic beads used in
cosmetic applications in 2019



total usage:
About 2,170T

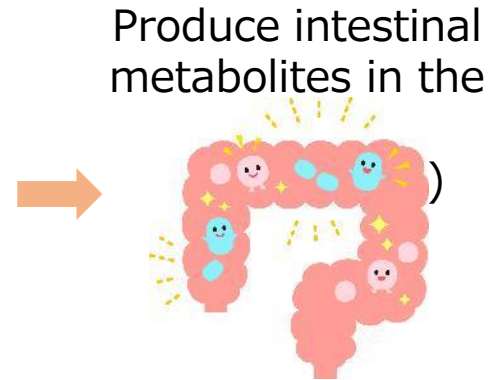
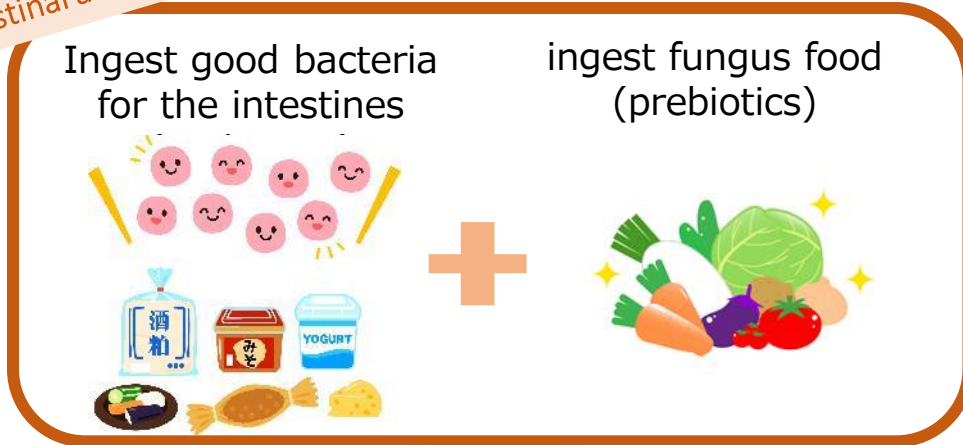
Source : Fuji Chimera Research Institute, Inc.
(Current status and future prospects of the fine
powder market in 2020)



“Intestinal metabolites” provided by Daicel

Now booming
intestinal activity

Ingesting "bacteria itself" and "food of bacteria" and producing intestinal metabolites in their own bodies

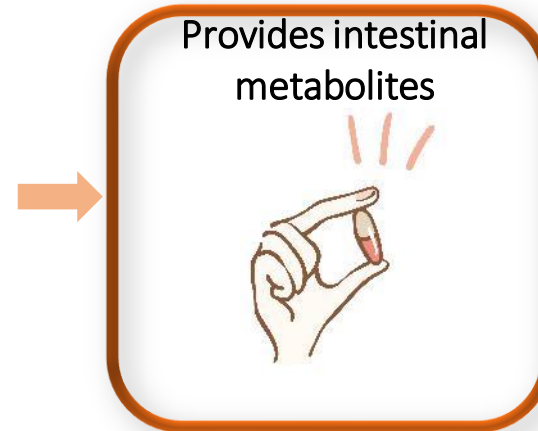
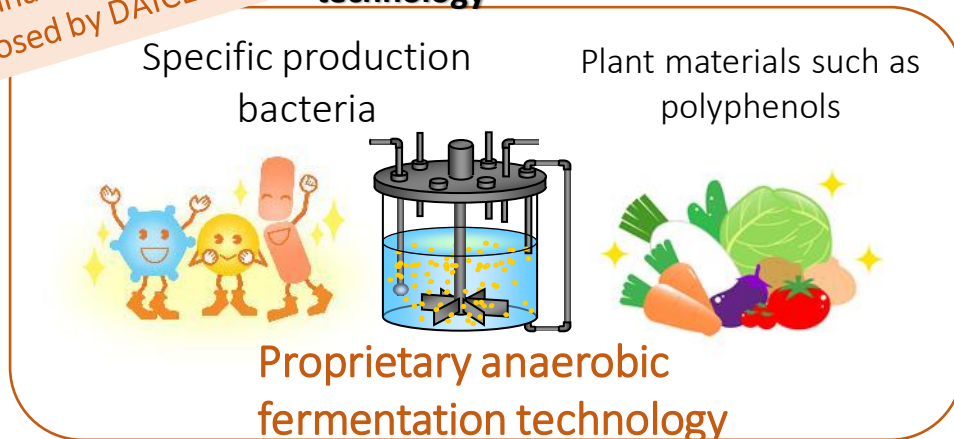


<Demerit>
Due to individual differences and environmental changes, it may not be possible to produce it, and the effect may not be felt.

Reproduce "in the stomach" in "inside the tank"

Intestinal activities
proposed by DAICEL

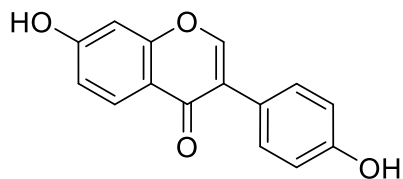
Providing **intestinal metabolites (functional food ingredients)** made with unique anaerobic fermentation technology



<Solution>
Effective ingredients can be ingested regardless of individual differences in intestinal flora and environmental changes.

Flavocell™ (Equol)

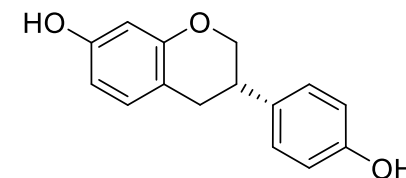
- Intestinal metabolites produced by intestinal bacteria from soy-derived isoflavones
- Expected effects: alleviation of menopausal symptoms, improvement of QOL



Daidzein (DAI)



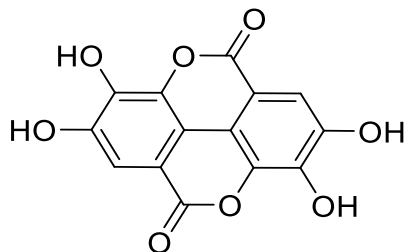
intestinal bacteria



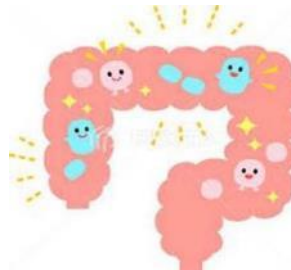
(S)-equol (EQL)

URORICH™ (UrolithinA)

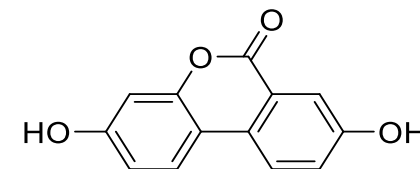
- Intestinal metabolites produced by intestinal bacteria from pomegranate ellagic acid
- Expected effect: Autophagy effect (cell regeneration)



ellagic acid(EA)



intestinal bacteria



Urolithin A (URO-A)

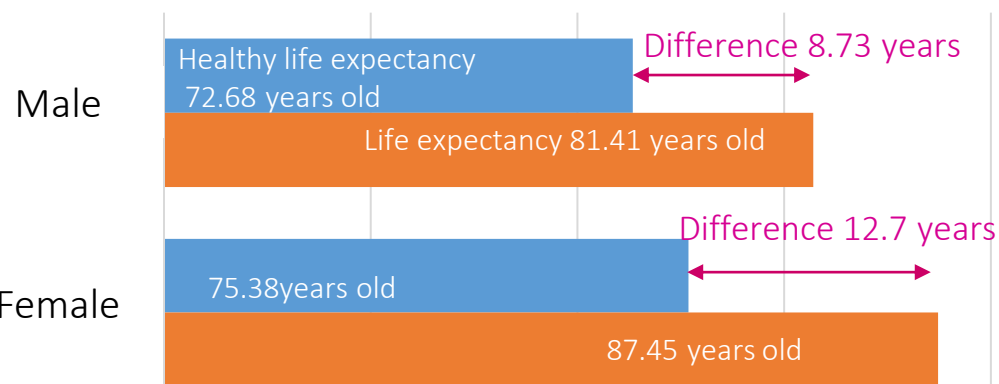


Issues in an aging society

- ◆ There is a difference of around 10 years between healthy life expectancy and average life expectancy, and many people are living with nursing care.
- ◆ Need to extend healthy life expectancy

Issues in extending healthy life expectancy in an aging society

Healthy life expectancy and average life expectancy (in 2019)



Source : About the 2019 value of healthy life expectancy by Ministry of Health, Labor and Welfare



Percentage of major reasons for needing nursing care

Dementia	: 18%
stroke	: 16%
Weakening	: 13%
Fracture/fall	: 13%
Joint disease	: 11%
Heart disease	: 4%



Source : Basic Survey of Living Conditions in 2019 expectancy by Ministry of Health, Labor and Welfare



Contribution to a healthy society

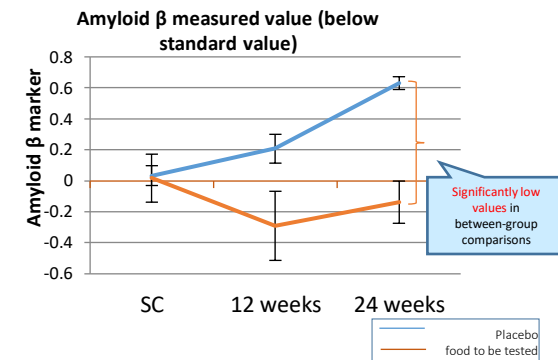
Currently selling and developing various materials that lead to a healthy life

"Konjac ceramide" that can be expected to improve brain function

- Human intervention study confirms that ceramide intake reduces amyloid β accumulation in the brain
- Aiming for commercialization as a functional food material for dementia prevention through further human intervention tests

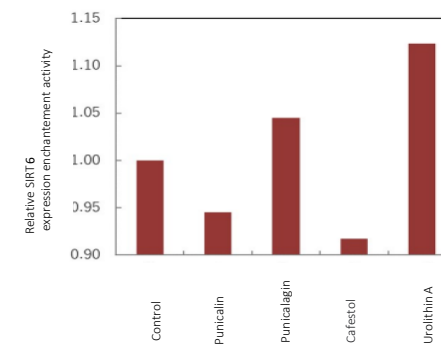


Study results (stratified analysis/
population with low blood amyloid β marker)



Anti-aging functional material "Urolithin A"

- Featured well-aging material that reactivates cells by activating autophagy and sirtuin genes
- Confirmed that it also has the effect of enhancing the expression of SIRT6 (one of the sirtuin genes) involved in anti-aging effects



New intestinal metabolite "8-prenylnaringenin" under development

- Intestinal metabolites of xanthohumol in hops
- Support materials for active seniors
- It is known to be effective in suppressing disuse muscle atrophy and can be expected to prevent and maintain muscle weakness.





Realize co-creation of value by building networks and actively disseminating information

University

Hokkaido University : Research on the preventive effect of konjac ceramide on dementia

Kyushu University : Functional studies such as sirtuin gene expression effects of urolithin A

Company

Cykinso, Inc. : Capital and business alliance

Healthcare Systems Co., Ltd. : Joint development of urolithin production test kit

Bizen Chemical Co., Ltd. : Co-founded SAC research group

FUJICCO Co., Ltd. : Isoflavones and lactobionic acid

Network construction and information dissemination

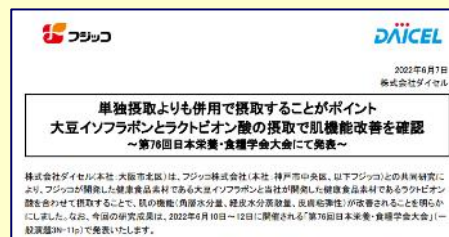
Industry/researcher network construction

- Japan Cosmetic Industry Association
- Japan Alliance of Health Food Associations
- Japan Health and Nutrition Food

Consortium activities

- Autophagy Consortium
- SAC research group
- Intestinal design co-creation project, etc.

Press release/Seminar



Notes Regarding Forward-Looking Statements

- The purpose of this document is to provide information and not to persuade any individual to take any action in response to the information contained in this document. Daicel has made the greatest possible effort to prepare this document with accurate information. The information in this document, however, may include risks or inaccuracy, and we do not guarantee the accuracy or reliability of this information.
- The reader is advised that the use of the information in this document is at your own risk. Any investment according to the prospects, target values, etc. appearing in this document might result in a loss. Daicel accepts no responsibility for such an eventuality.

All rights reserved by Daicel Corporation.

This document shall not be copied or distributed to a third party without the permission of Daicel Corporation.