

AFPS2017 -

Asian Federation for Pharmaceutical Sciences 2017

November 21st-23rd, 2017

Wanda Realm Xiamen North Bay , Xiamen, China

Happy to take medicine

Development of jelly kit formulation for elderly people with difficulty swallowing or children

 **MORIMOTO Pharma.Co.,Ltd**

President SHUJI MORIMOTO



MORIMOTO Pharma.Co.,Ltd

設立 Founded : **2005, May**

代表者 CEO : SHUJI MORIMOTO **盛本修司**

**(-2002 TAKEDA PHAMACEUTICAL
元武田薬品 製剤研究)
Lansoprazzle OD, Leupron depo)**

資本金 capital : 60,000,000 JYEN

事業内容 Business : **R&D for New Dosage Form
Jelly Products**

Licence GMP & China Consulting, Partnaring, etc

Nursing Care Busibess

所在地 Address: Head Office, R&D, Plant
Osaka Japan

ホームページ : <http://www.morimoto-iyaku.jp>



1982年

2002年

2005年

2015年

TAKEDA pharmaceutical

MORIMOTO-Pharma

專利:約70件

約30件

盛本修司(武田薬品)出願特許リスト

モリモト医薬出願特許リスト

90年代

PAT技術(透過度センサー)

1980年代

微量充填機

1997年~ OD錠

Jelly

果皮包装(易剥離) 风湿症用

2005年~2015年

Jelly

進化

出願番号	発明の名称
S59002305	粉末...
S62147464	小容量...
S63127800	小容量...
H0118566	充填装置における充填量...
H0120976	注射針のキャップ
H03009406	...
H03040332	個別密封容器に收容した...
H03128728	個別密封容器に收容した...
H03128729	個別密封容器に收容した...
H03128730	個別密封容器に收容した...
H03128731	個別密封容器に收容した...
H08344363	輸液容器
H09032522	互いに連通可能な複数...
H09048712	互いに連通可能な3室...
H09144849	2室型注射器
H09112001	濃厚流動物質を併用す...
H09159082	扶持式薬剤投与装置
H09112002	互いに連通可能な2室を有する輸液容器
H10167000	ビニル性包装体
H10135472	医薬製剤
H10219266	医薬製剤
H10222151	医薬製剤
5439	ビニル性包装体及びビニル性...
4364	易崩壊性固形物お...
3848	ビニル性包装...
5144	医薬製剤
0607	同
H07210478	固形物の投入装置及び該投入装置を備える容器
H07169079	粒剤の製造法
H07265067	固形物の螺旋搬送装置
H08011355	固形物の螺旋搬送装置
H08017500	固形物の投入装置及び該投入装置を備える容器

特許番号	発明の名称
3特開2011-206152	医薬組成物容器
4特開2011-206151	医薬組成物容器
5特開2011-206150	併用利用容器、薬剤用容器及び補助利用容器
6特開2011-200261	混合方法
7特開2011-147659	...
8特開2008-020151	...
9特開2007-204137	...
25特許5173159	...
26特許5114552	凍結乾燥方法および凍結乾燥装置

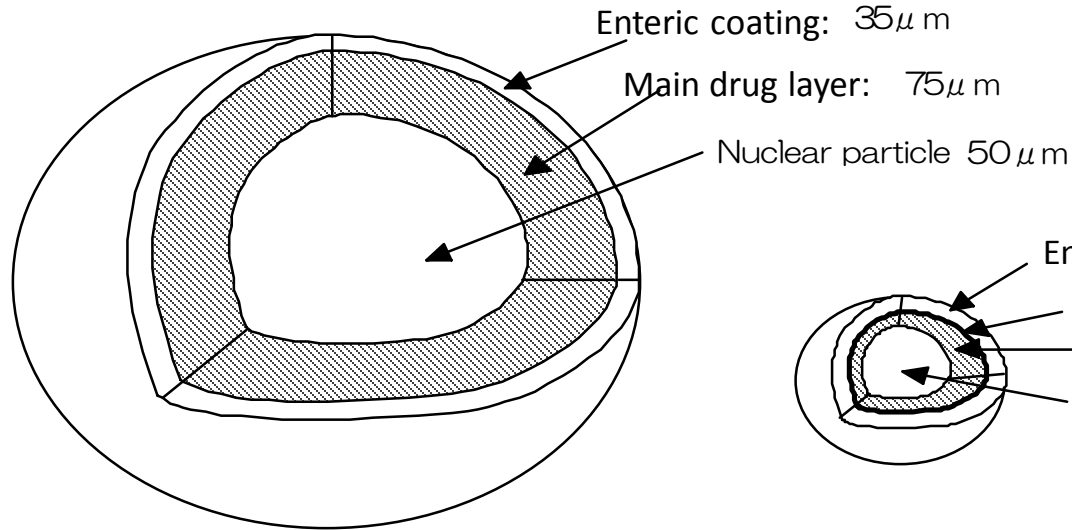
TAKEDA pharmaceutical --TIANJIN Main products

①Lansoprazole ② Lansoprazole OD Tablet

Orally disintegrating tablets

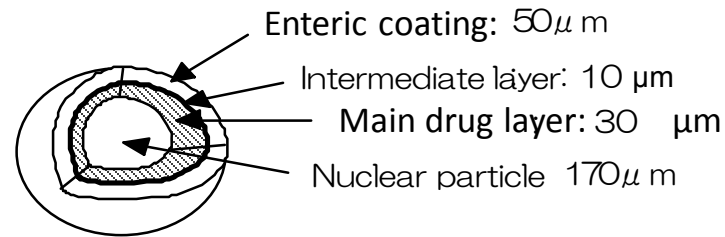
(contain lansoprazole granule)

2001 **Lansoprazole OD** Tablet is launched



Current tablet (30mg/ 370mg)

Diameter : $1070\mu\text{m}$



Granule (30mg/ 200mg)

Diameter : $350\mu\text{m}$

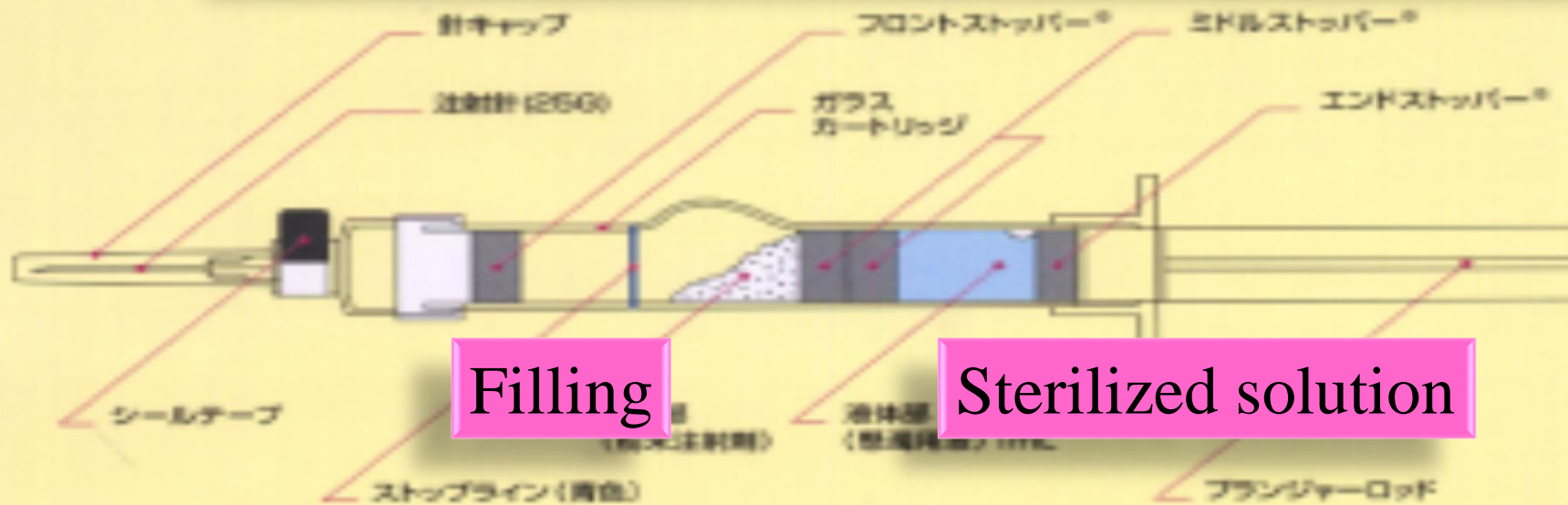


TAKEDA pharmaceutical --TIANJIN Main products

③ Leuproelin Acetate



LH-RH inductor microsphere technology one month type



Published in the newspapers June, 2005



**NEW
TAKEDA**



*Spin out from TAKEDA
To Contribute to world
Health
By CEO MORIMOTO*

中には起業の道を選ぶ猛者も居る。大阪府の医療ベンチャー、モリモト医薬の盛本修司社長は武田時代、微量の薬剤を必要ただけ正確に容器に詰めることができる、当時としては画期的な充填機を発明した。この装

“大物”は引っ張りだこ

2-4 最近の主な退職者

氏名	武田薬品時代の主な役職	現職
デボラ・ダンサイア	取締役	米医薬ベンチャー、フォーラムファーマスーティカルCEO
大川滋紀	取締役・研究開発統括職	JT医薬総合研究所副所長
伴 寿一	事業開発部長	富士フィルム医薬品事業部統括マネージャー
藤澤朋行	医薬研究本部研究アライアンス室長	投資ファンド、ウィズ・パートナーズマネージングダイレクター

置を、武田だけでなく世界に広めた
位と思ひ、2002年に20年勤めた
武田を飛び出し、起業した。最近
誤飲しても人体を傷つけない、新
しい薬の包装を開発した。武田時代
に開発したものよりも、格段にいい
のができた。
昔から「社長になる」が口癖だっ
たという盛本社長。今は「武田を抜
き、武田を超える給料を社員に支払
ってみせる」と意気軒高だ。

Column

製薬産業への転職が多数派
新天地で活躍のヤメ武田も

~ Elderly care home ~



Enormous time to care for patient

Social Problem of Crushing Tablet In Care Home



Patient

- ① Loss of API
- ② Reaction of API
- ③ Change of ADME
(to Change Efficacy, Side Effect)

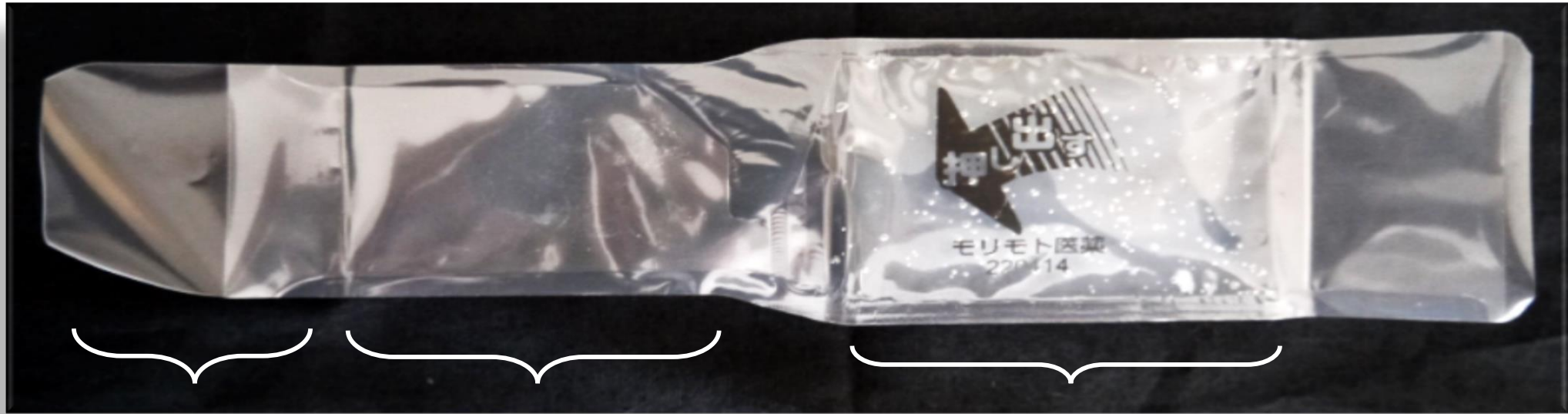
-
- Care Person
- ① Labor to process of Crushing,、
 - ② Hazard of Drug

Take medicine with GT

Gel Together



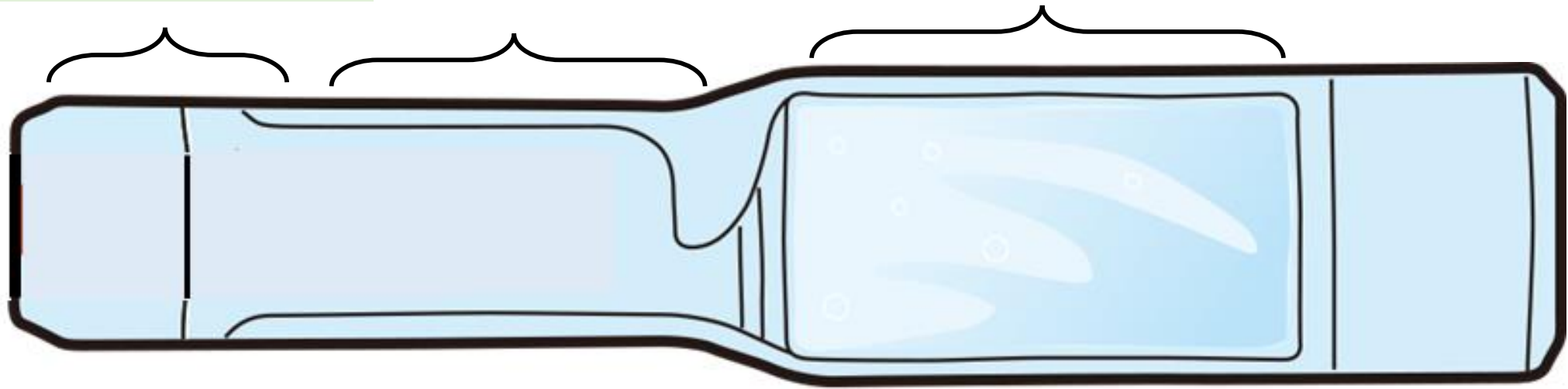
Seal & Fold technology (patented)



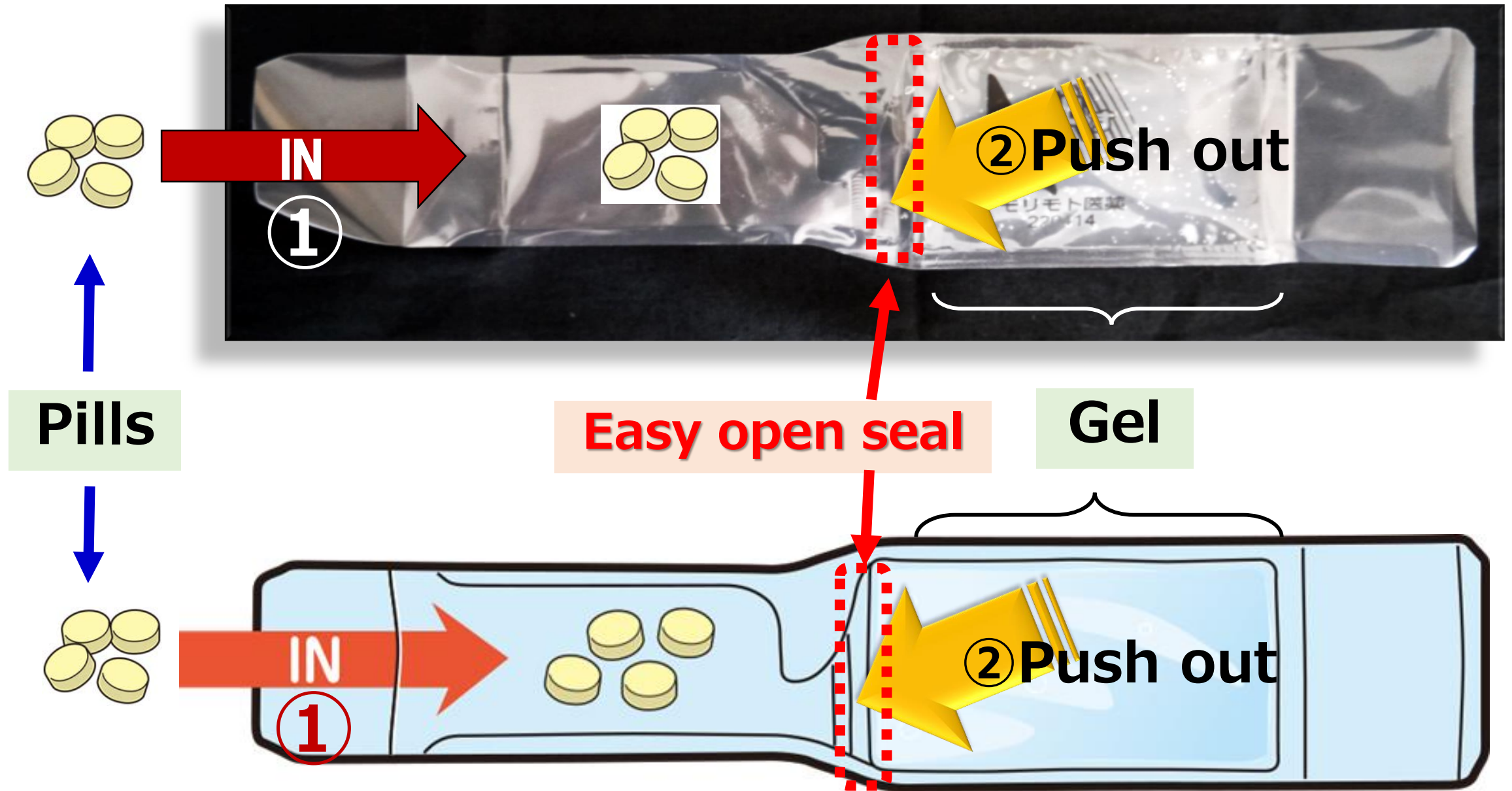
Drug entrance &
Drinking side

Pill Location

Gel



Seal & Fold technology (patented)

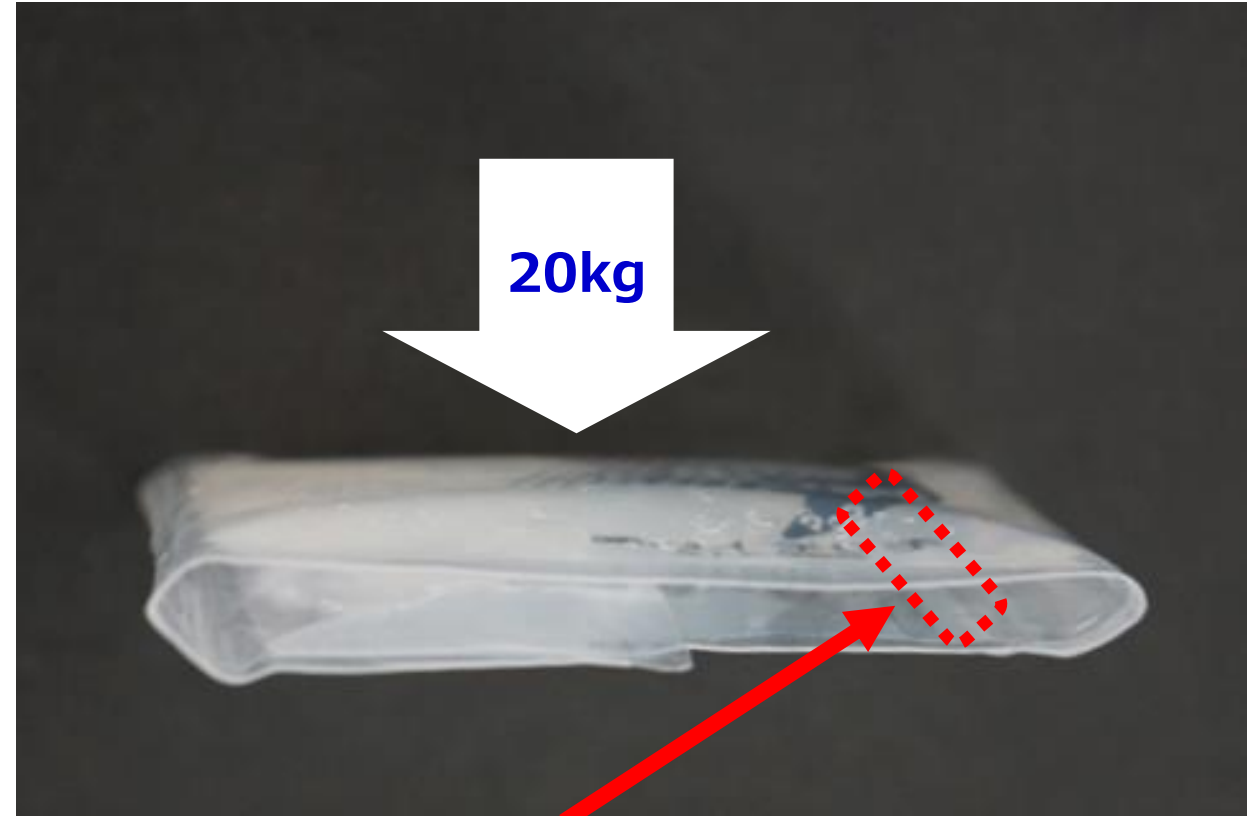


Seal & Fold technology (patented)

- ◆ The medicine part is easily opened by squeezing with **2kg**.



- ◆ GT can stand with pressure more than **20kg** when folded.



Easy open seal

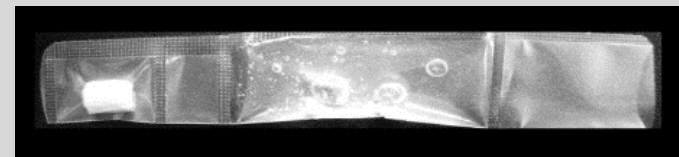
GT pack & GT dosage form

1. GT pack (Food)



2. GT dosage form (Medicine)

① N



② L



③ Plus



④ For children



World's first, Oral dosage form of W-bag

GT : Gel Together / Good Taste

What is “GT dosage form”

Pills and Gell are separated in a bag , to administer , squeeze the Gel Compartment to combine Pills and Gel.



In a folded state



Open state

Variation of GT

**powder wrapped
by thin film**



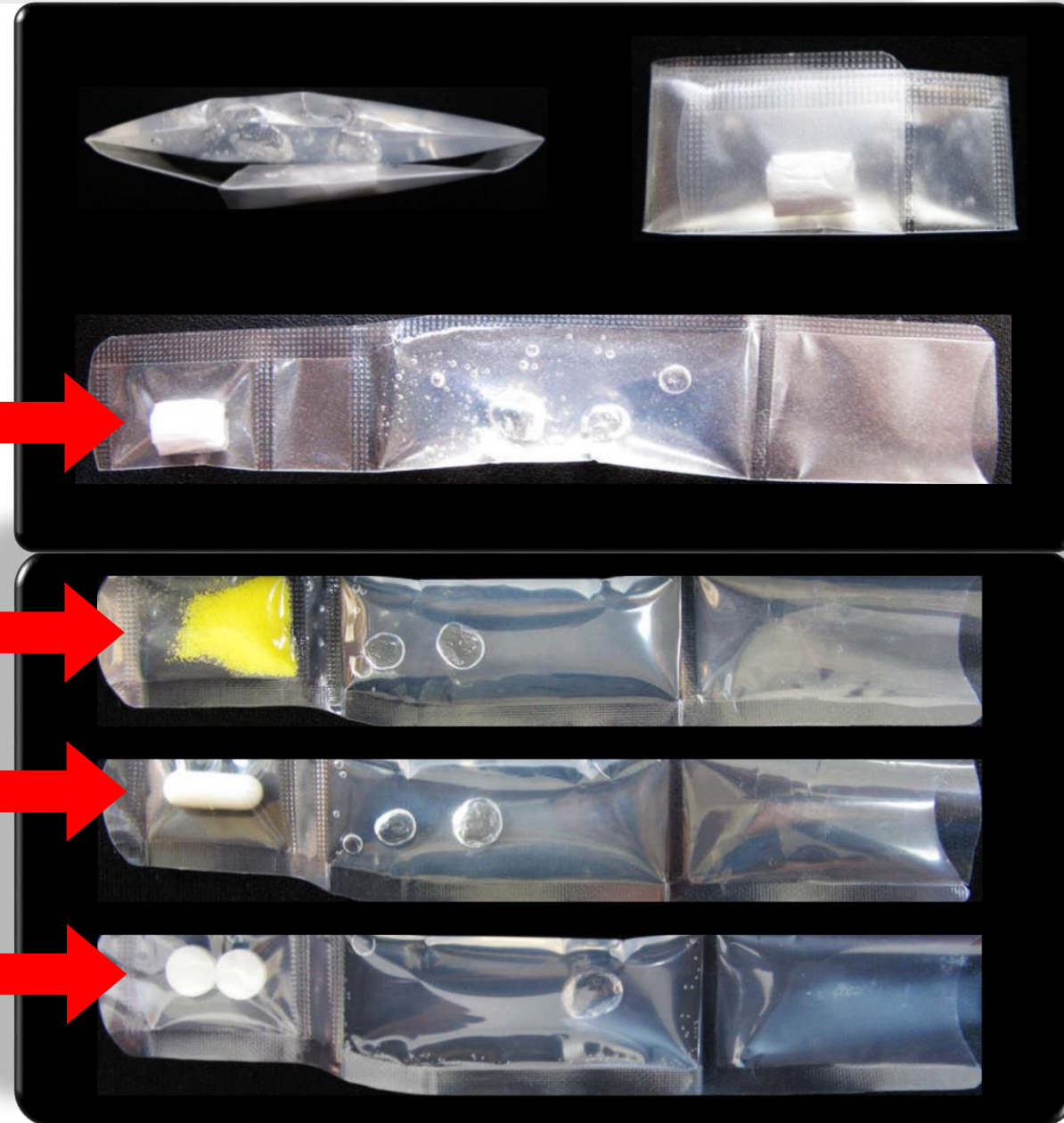
Powder medicine



Capsule

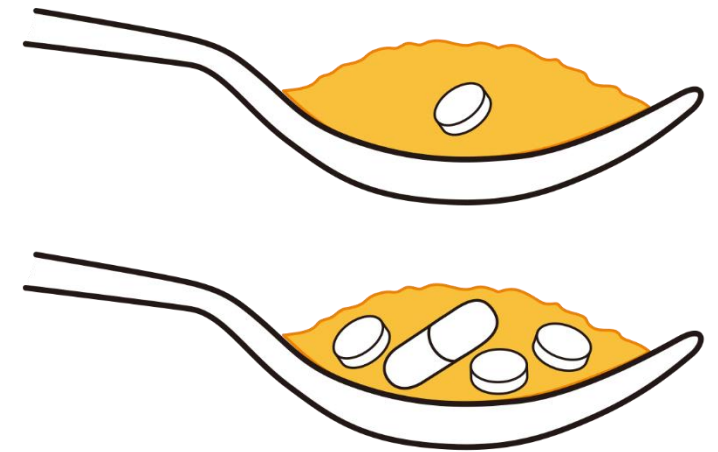
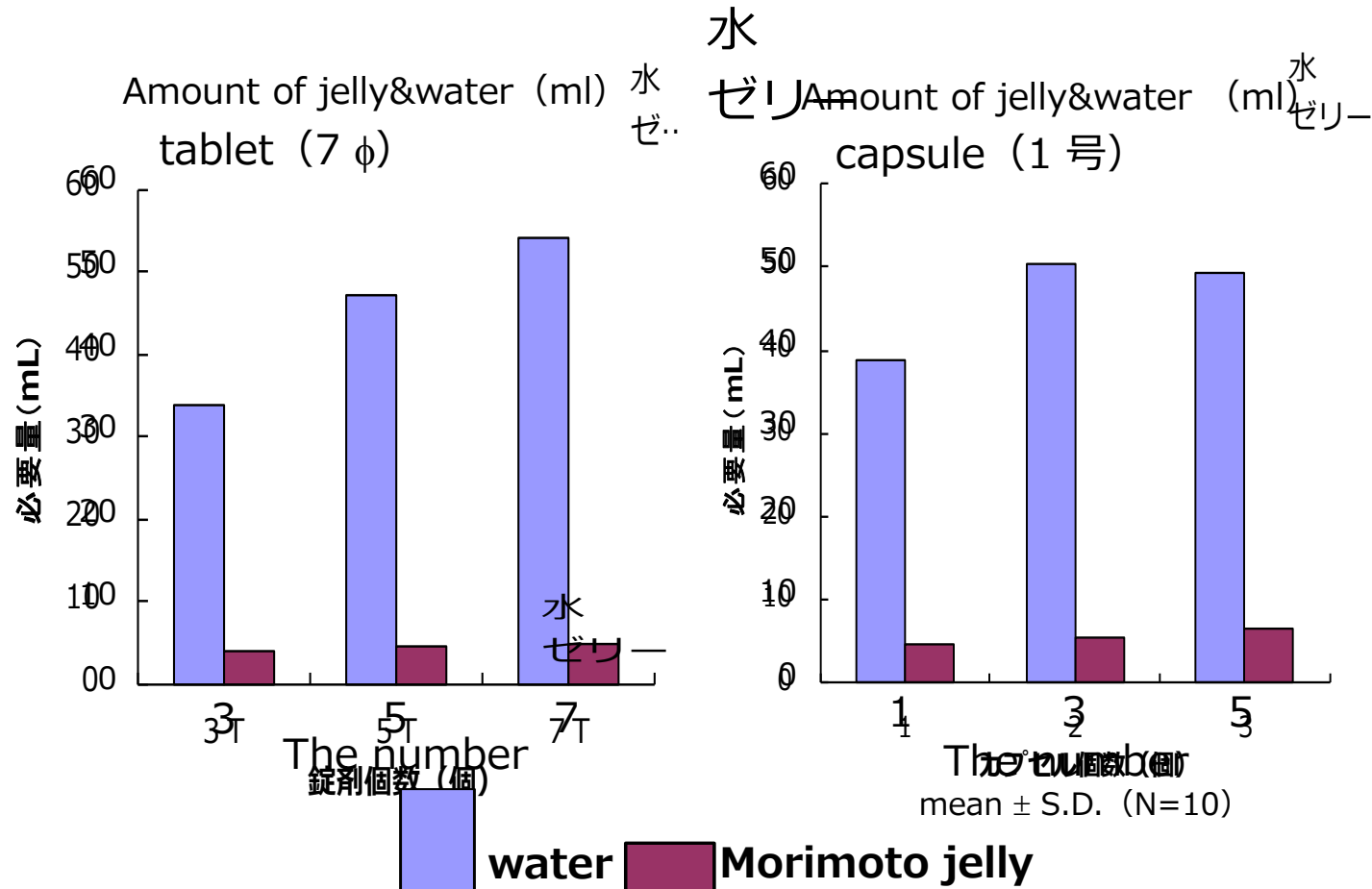


Tablet



1. Test result of water quantity and jelly amount necessary for ingestion

(company data)



Even though tablets increase, jelly can be taken in small amounts.

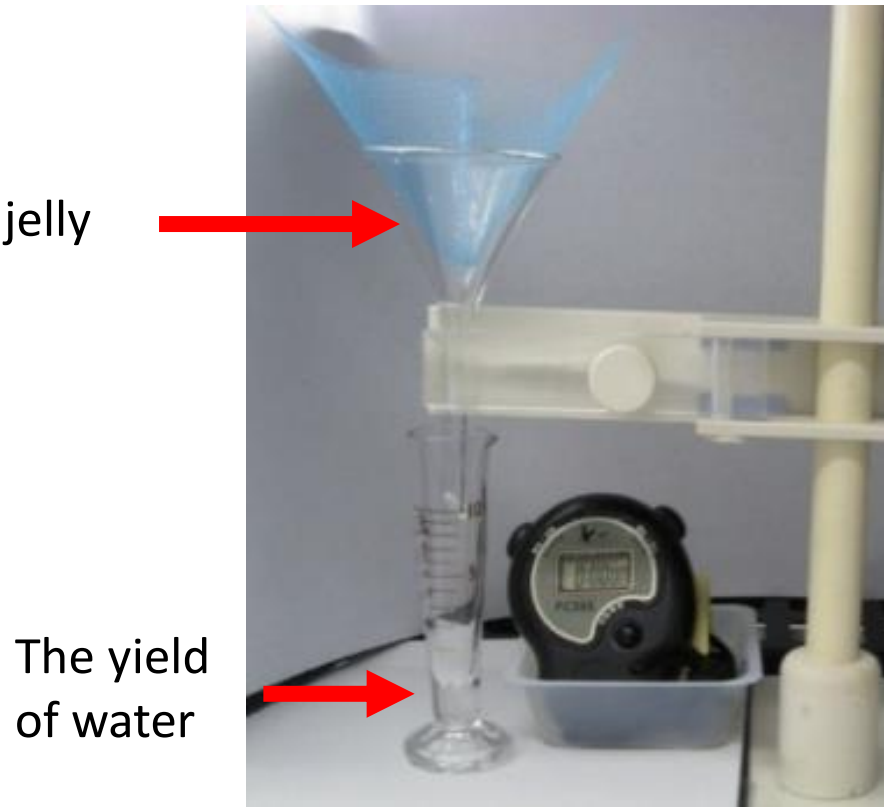
Jelly can be good for swallowing using about one tenth of the amount of water

2. Water separation test result (compared to other jelly) (company data)

(morimoto jelly, A jelly, B jelly compared water percentage ;water by weight)

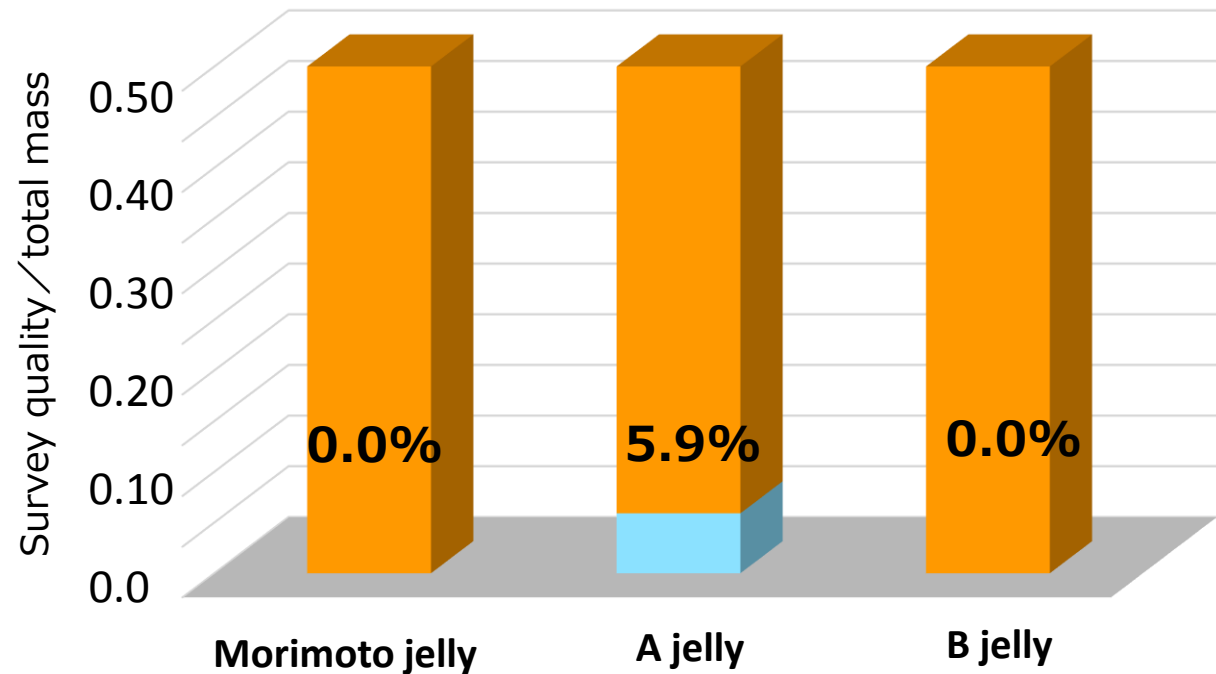
◆ exhalation rate (initial stage)

➢ sample:25g Only measure precipitation of moisture in jelly.



Test instruments

exhalation rate (initial stage)



Morimoto jelly was 0.0% water by weight

3. Physical property evaluation test result [Hardness, Adhesion, Coagulability]

(Company data)

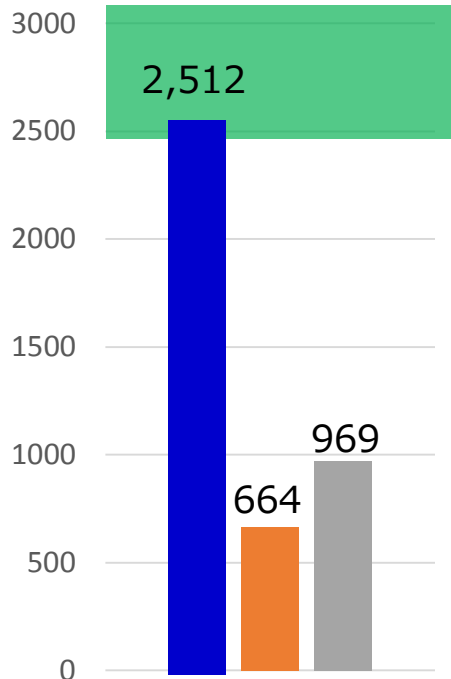
(Consumer Agency
「Difficulty swallowing food Authorization Criteria」)

「Difficulty swallowing food test method」 of
「permission for special use food」 2001 by GVM

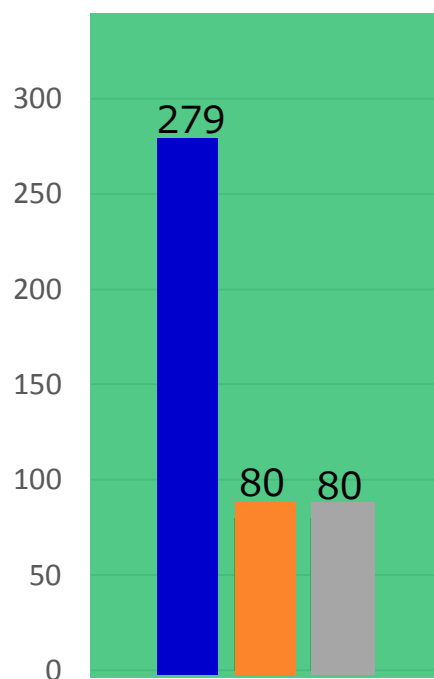
病院食事例を基に策定された
平成21年2月12日食安発第0212001号の許可基準分類 厚労省

Standard	AC I	AC II	AC III
Hardness [N/m ²]	2500~ 10000	1000~15000	300~20000
Adhesion [J/m ³]	~400	~1000	~1500
Coagulability [-]	0.2~0.6	0.2~0.9	-
Difficulty level	high	middle	low

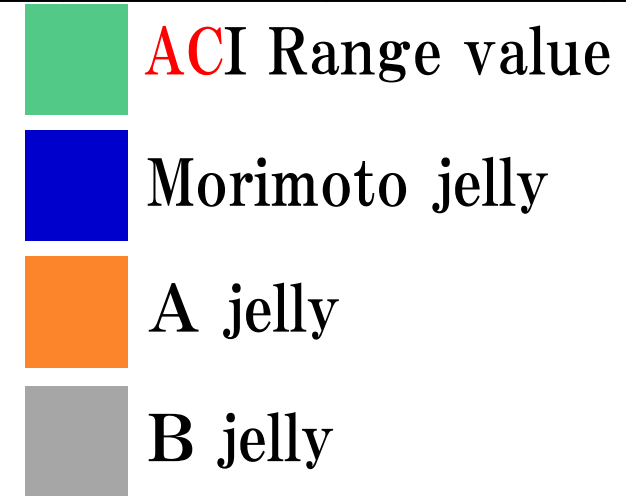
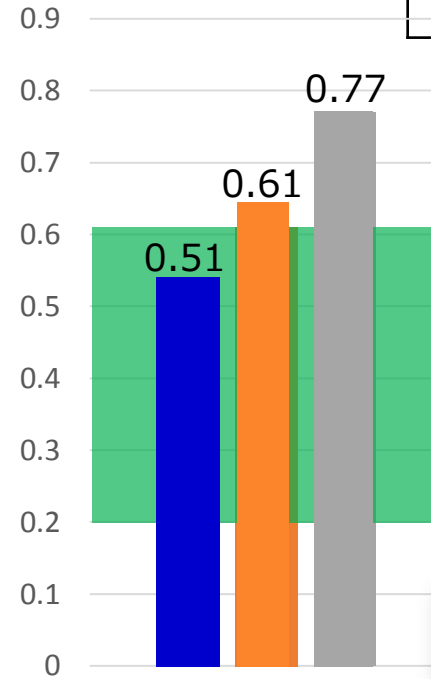
20°C
Hardness [N/m²]



Adhesion
[J/m³]

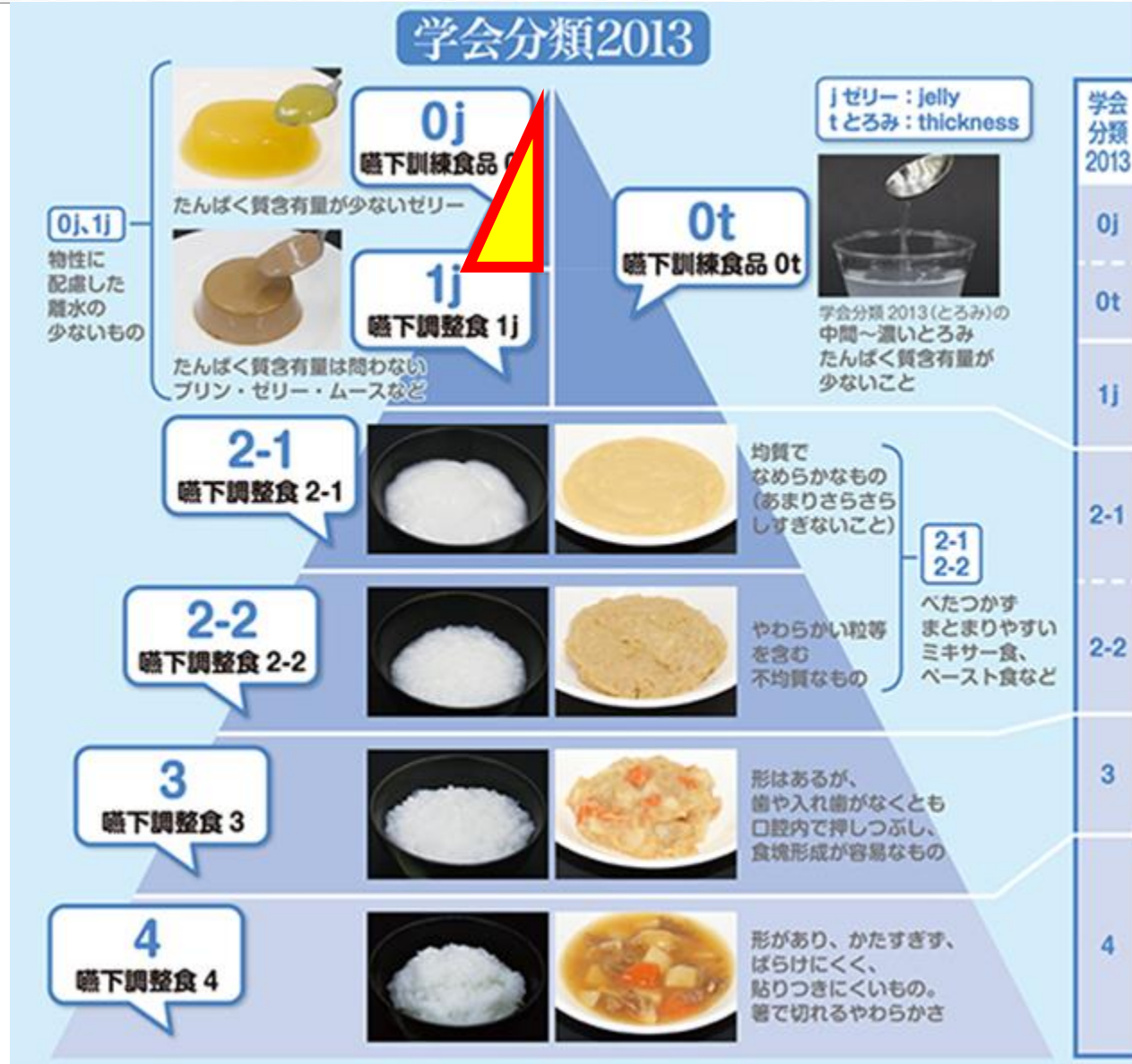


Coagulability [-]

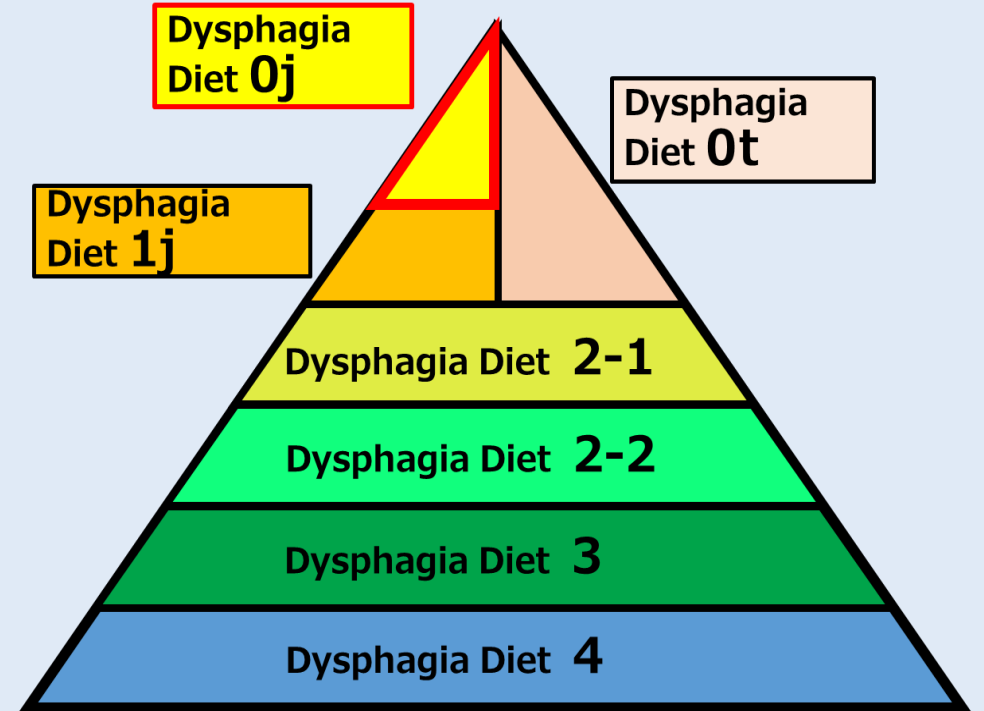


Morimoto jelly compliance with AC I

Society classification 2013 (meal) Simplified chart (Japan swallowing Rehabilitation society)

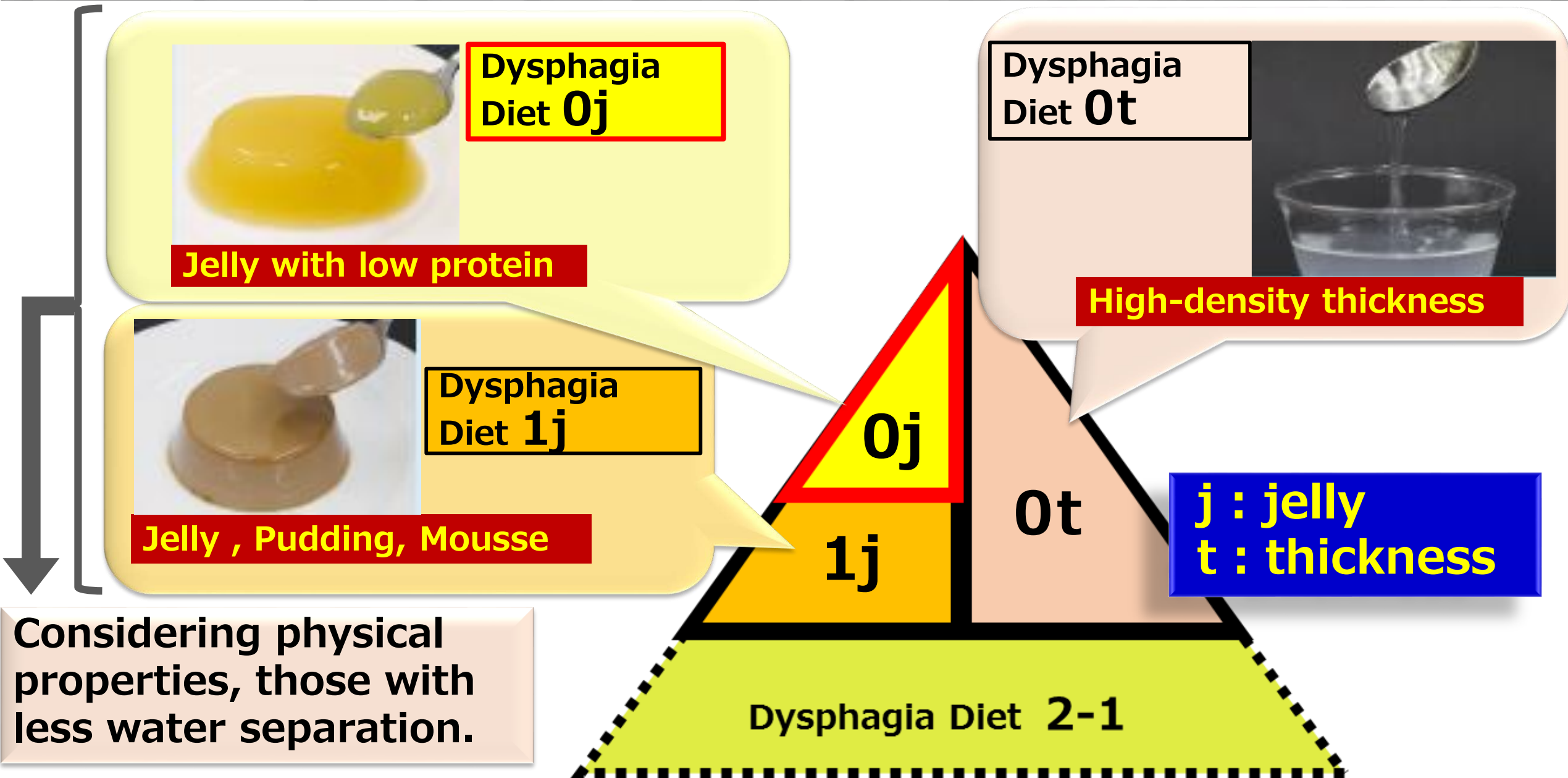


★ Appropriate bolus
★ No water separation



From Japan swallowing Rehabilitation society

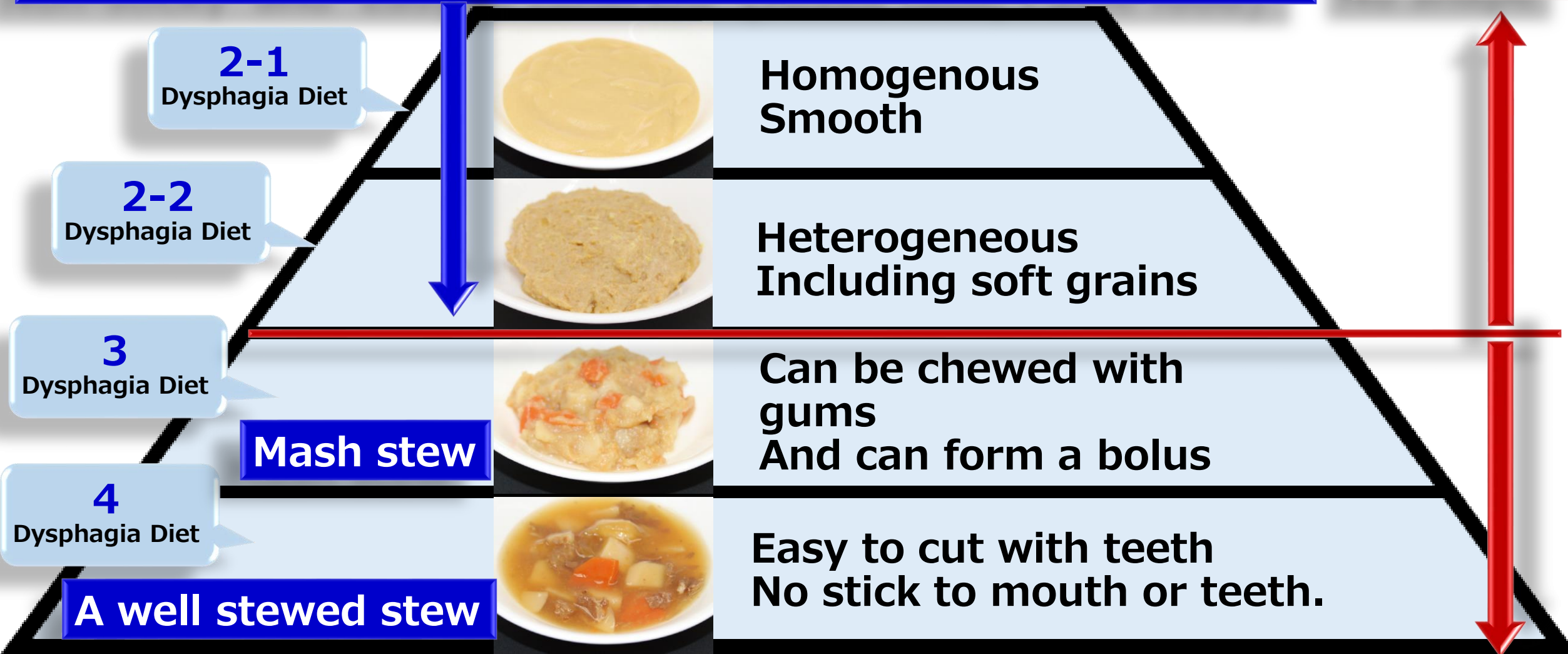
Society classification 2013 (meal) Simplified chart



Society classification 2013 (meal) Simplified chart

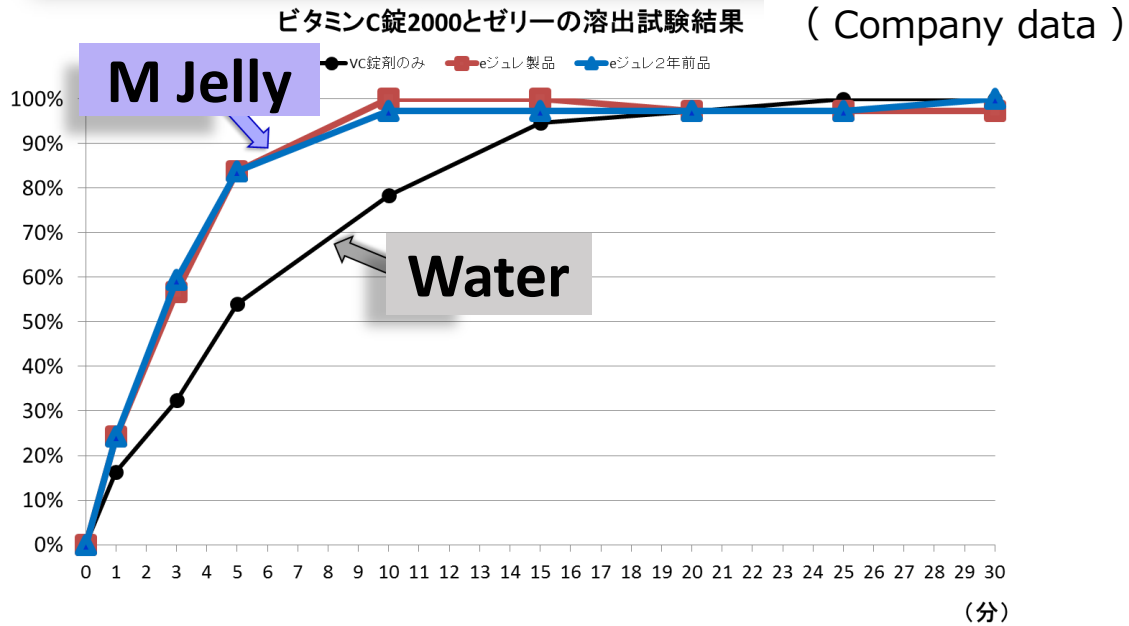
Non-sticky and Easy to coherent (Mixed food, Paste food)

No shape

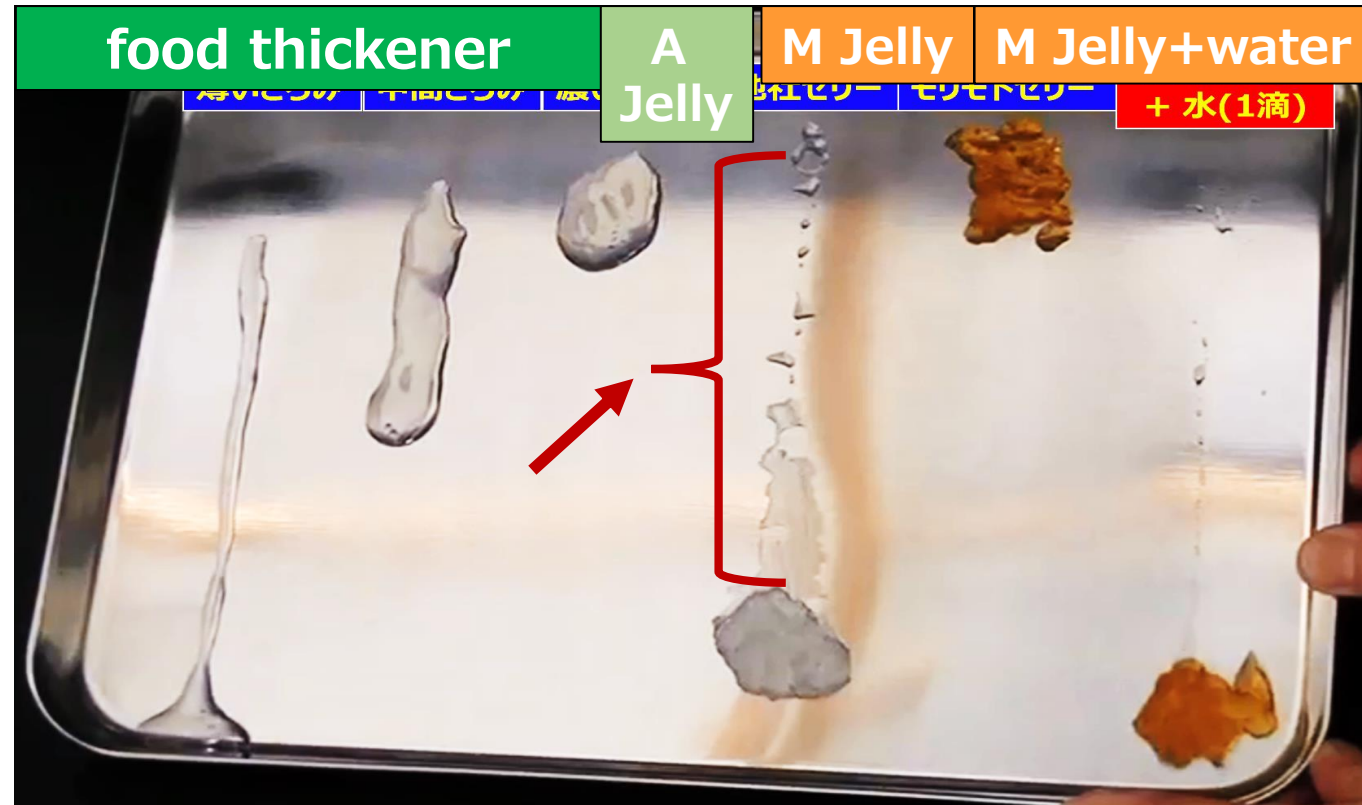


Has pieces of shape things

Dissolution test

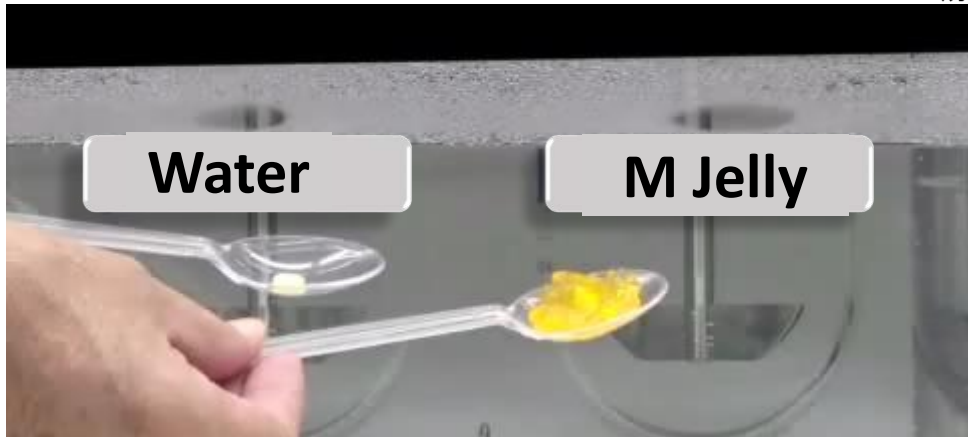
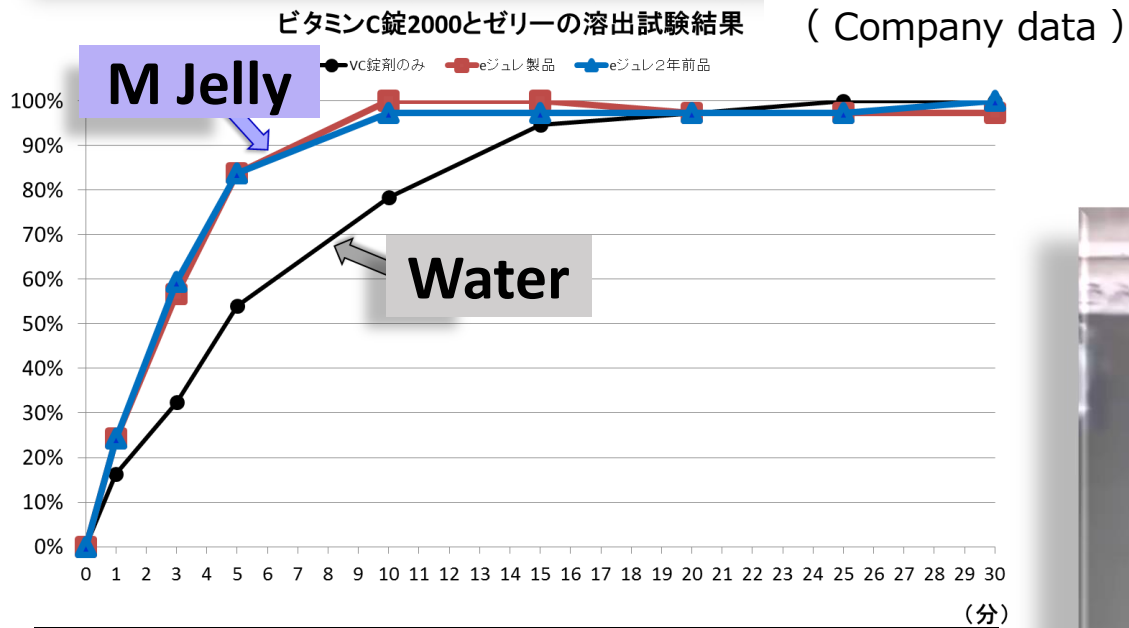


Adhesion and liquidity test evaluation



Other jelly → Water separation
The reason of Accidental ingestion

Dissolution test



Dissolution time when it is shorter than water

Adhesion and liquidity test evaluation



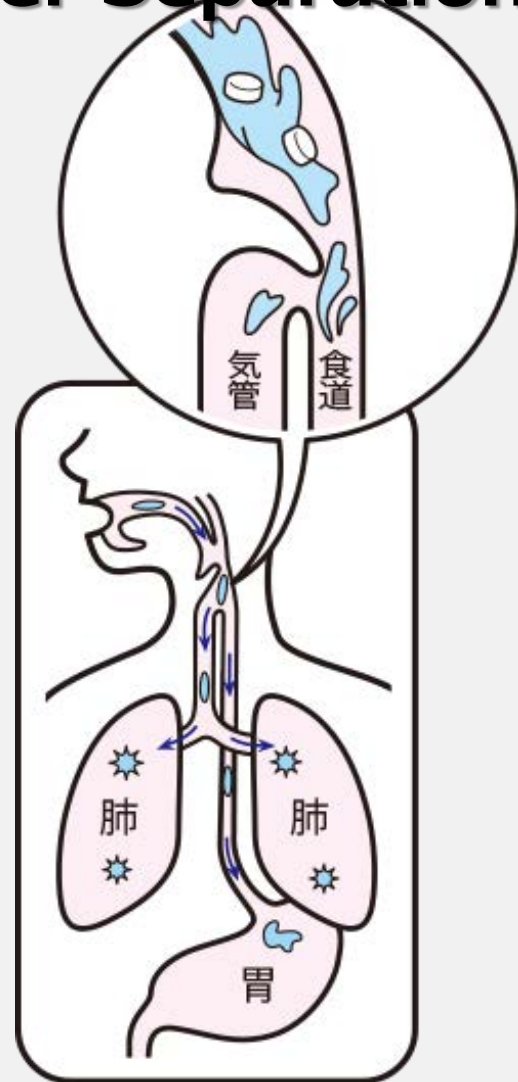
Big Difference between Gel and Other Normal Jelly

◆ Jelly with Water Separation —



Normal Jelly

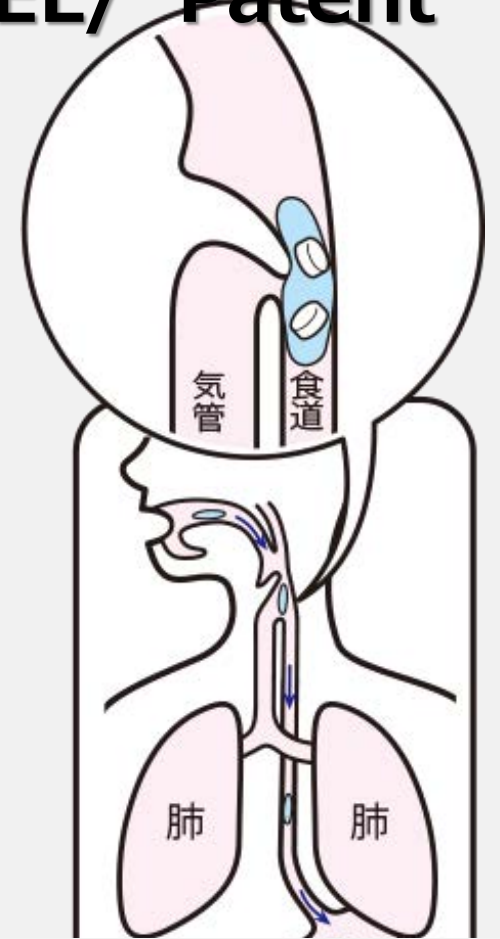
**Tablet
Separation
Mis**



◆ MORIMOTO GEL/ Patent



**Hold Pills
Make bolus
Easy Take**



**Uniformity
No Water Separation**

VF TEST of Pill in MORIMOTO GEL

VF(嚥下造影検査)

2014年7月16日
浜松市リハビリテーション病院

Thanks
*Hamamatsu
City
Rehabilitation
Hospital*
Dr.
Fujishima
Dr.
Kanazawa。

Stability test

(Company data)

Room temperature long-term storage (measure at 20 °C)

Study item	Unit	Initial	4months	8months	15months	23months	30months	38months
Hardness	N/m ²	2133	2011	1947	1995	1896	2207	2165
Coagulability	-	0.53	0.51	0.58	0.61	0.62	0.60	0.61
Adhesion	J/m ³	588	488	378	446	438	550	605
p H	-	3.75	3.76	3.76	3.70	3.73	3.66	3.77
Water separation	%					0.41	0.03	0.07
Examination of food bacteria	-	Conformity	Conformity	Conformity	Conformity	Conformity	Conformity	Conformity

Three years stability

GT formulation (medical product)

◆ Tablet & Capsule case



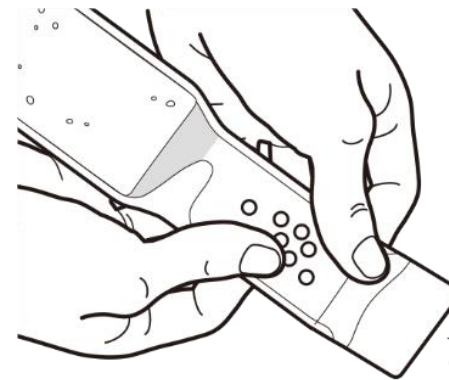
◆ Supplement case



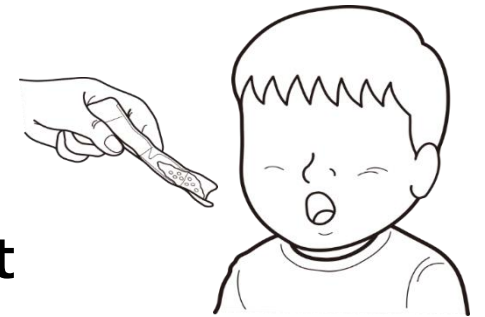
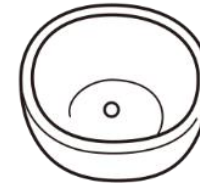
◆ Children's use case (Mini-tablet)



GT for children (Weight adjustable dosage form)



Take out mini tablet according to weight



※One mini tablet is equivalent to 1 kg of body weight

age	0 month	3 month	6 month	1old	2old	3old	4old	5old	6old
body weight	3kg	6kg	8kg	10kg	12kg	14kg	16kg	18kg	20kg
Mini tablet	3	6	8	10	12	14	16	18	20

} tablet

■ Take out mini tablet according to weight

How to use



**Insert
medicine**



Fold drinking side



squeeze jelly



hang down , not spill

- Easy to carry !
- Easy to take !
- Hygienic !



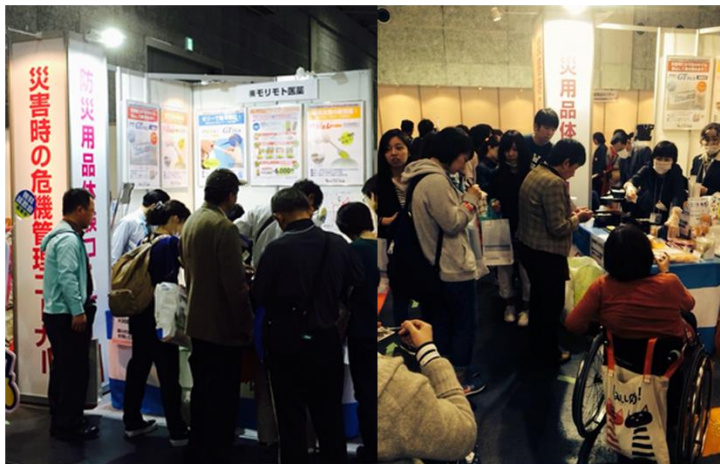
**Insert in mouth,
Take it**



**Extrude to the
front**

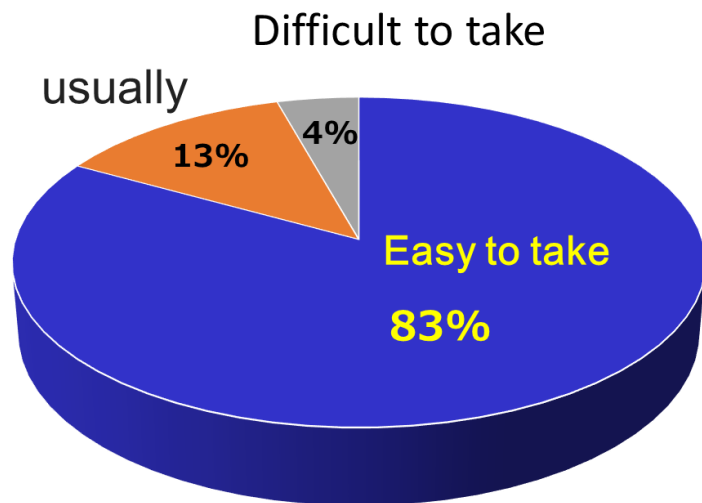
「MORIMOTO Jelly」 Questionnaire Survey results

◆Barrier Free Exhibition2015



At INTEX Osaka

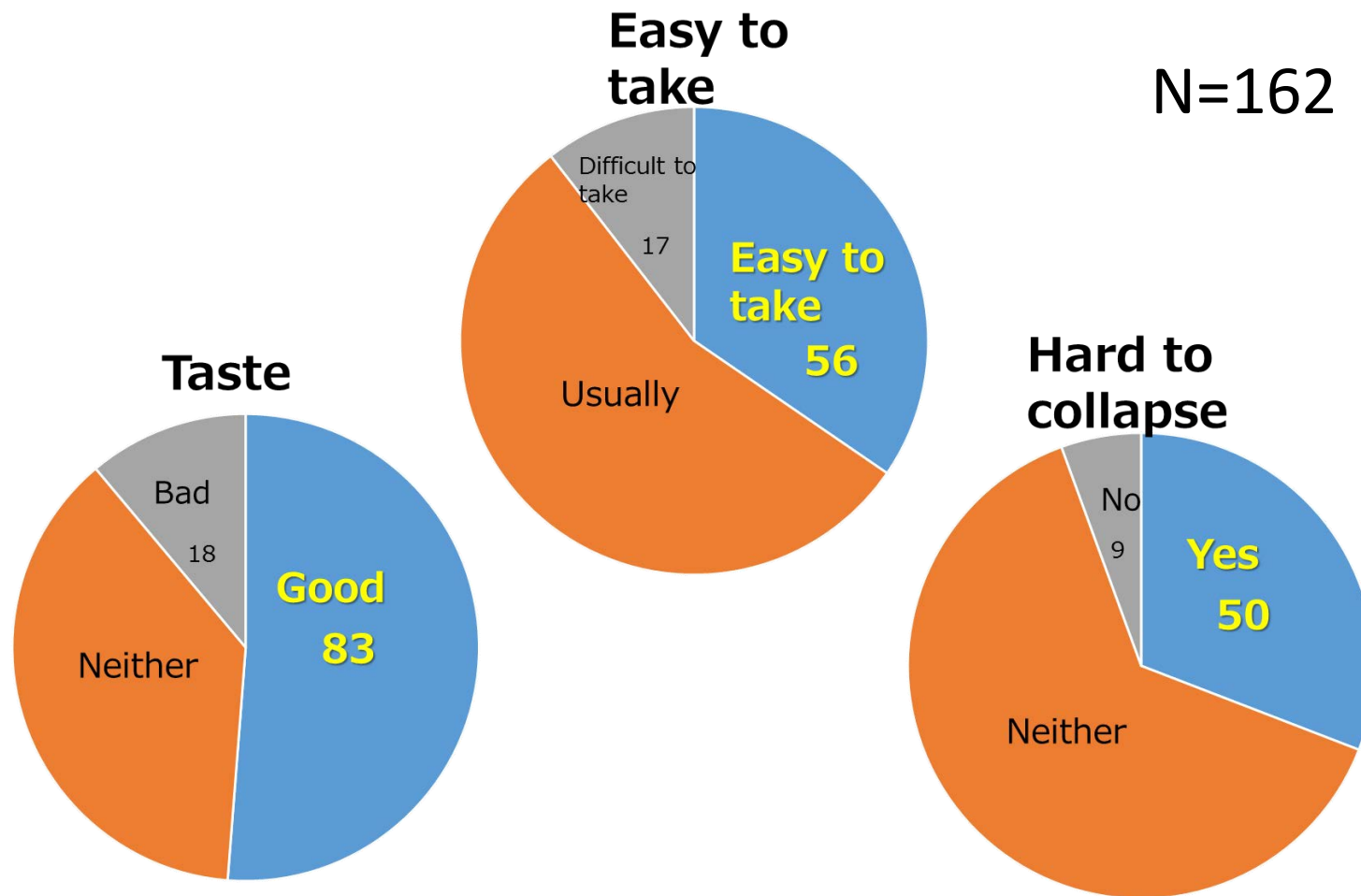
第21回 高齢者・障がい者の快適な生活を提案する総合福祉展
バリアフリー-2015



Number of respondents : 2,047

◆Students from the University Faculty of Pharmacy

N=162



~ Dosing support jelly product lineup ~

in Japan



5mL×10



5mL×6



5mL×100



21mL×10



150mL×1



100g×1



500g×1

Export



9g×10



Mineral
reinforcement

100g×1



GT Pack



5mL×5



5mL×20

Summary

MORIMOTO JELLY is ;

Stable and Palatability

**Very good for people with swallowing difficulty ,
such as elderly and infant and brain disease**

Innovative for administration of medicine

**To Provide with Solution for Social Problem such
as Drug Crushing in Nursing Home**

**GT technology is World first Technology
with Oral W-bag System for medicine ;**

Enhancement of compliance for drug taking

Easy swallowing safely and comfortably without water

Thank you for your attention

Want
Chinese and Asian **Human Resources**
Collaboration of R&D and Marketing

 **MORIMOTO Pharma.Co.,Ltd**

President **SHUJI MORIMOTO**

(株) 盛本医薬 盛本修司

WECHAT

