Slide 1

Feeding the (very) elderly: An opportunity for molecular gastronomy & food design

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Slide 2

The constitution of the World Health Organization of the United Nations (1947) defines health as:

"a state of **complete physical, mental and social well-being** and not merely the absence of disease or infirmity"

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Slide 3

An aging population (changes 2015 to 2050)

	2015		2050	
	60+	80+	60+	80+
Australia	20.4	3.9	28.3	8.3
Canada	22.3	4.2	32.4	10.6
Chile	15.7	2.7	32.9	10.3
China	15.2	1.6	36.5	8.9
France	25.2	6.1	31.8	11.1
Germany	27.6	5.7	39.3	14.4
Japan	33.1	7.8	42.5	15.1
Mexico	9.6	1.5	24.7	5.4
Rep. Korea	18.5	2.8	41.5	15.9
USA	20.7	3.8	37.9	8.3
World	12.3	1.7	21.5	4.5

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Slide 4

The trend: Particular alimentations

Roz Chast, 2010

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Slide 5

We can now design special foods for the elderly

Smile Care Foods Japan

Mastication and swallowing dysfunctions

Loss of muscular body mass and bone mass

NEED FOR TEXTURE- MODIFIED AND SPECIAL FOODS FOR THE ELDERLY

Gradual loss in sensory perception and appetite

Other specific nutritional needs
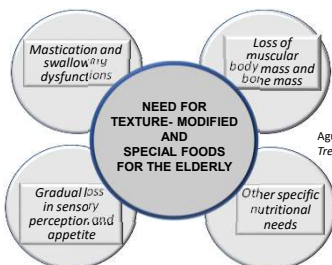
Aguilera & Park (2016). *Trends in FS&T* 57:156-164.

https://www.maff.go.jp/e/policies/food_ind/attach/pdf/index-9.pdf

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Slide 6

How are we going to feed the elderly?

EXTERNAL FACTORS

- Psychological conditions
- Physiological changes
- Existing pathologies
- Autonomy
- Socio-economic aspects
- Situational factors

FOOD DELIVERY FORMATS

INTERNAL FACTORS (individual)

- Oral processing & sensorial perception
- Swallowing of bolus
- Digestion and absorption
- Healthy microbiota

Physical state of food

FORMULATION AND DESIGN

Nutritional needs and bioavailability

Aguilera, J.M., Covacevich, L. 2023. Designing foods for an increasingly elderly population. *Curr. Opinion Food Science*

Calligaris, S. 2022. Designing food for the elderly: the critical impact of food structure. *Food Function* 13:6467-6483

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Labelling of special foods in Japan

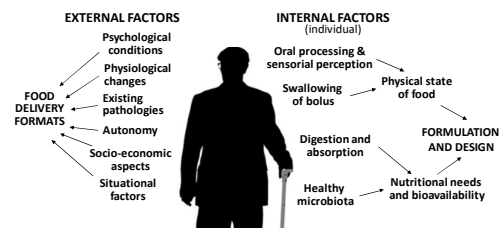chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.maff.go.jp/e/policies/food_ind/attach/pdf/index-9.pdf

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JMA 2025   8

Food guide pyramid for the elderly (Korea)

Kim, B. K., Park, D. J., & Oh, S. (2019). Application of dairy food processing technology supplemented with enriched nutrients for the elderly: I. nutritional conditions and care-foods for the elderly. *Journal of Dairy Science and Biotechnology*, *37*(1), 69-80.

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Contributions from chefs: molecular gastronomy

Science-based applications of ingredient functionality in the **design of tasty, soft and creative structures**

| Transparent ravioli Potato starch/lecithin (edible film) | Glassy sugar sphere | Artificial alginate caviar (gel) | Carrot "air" (foam) |

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Thank you

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