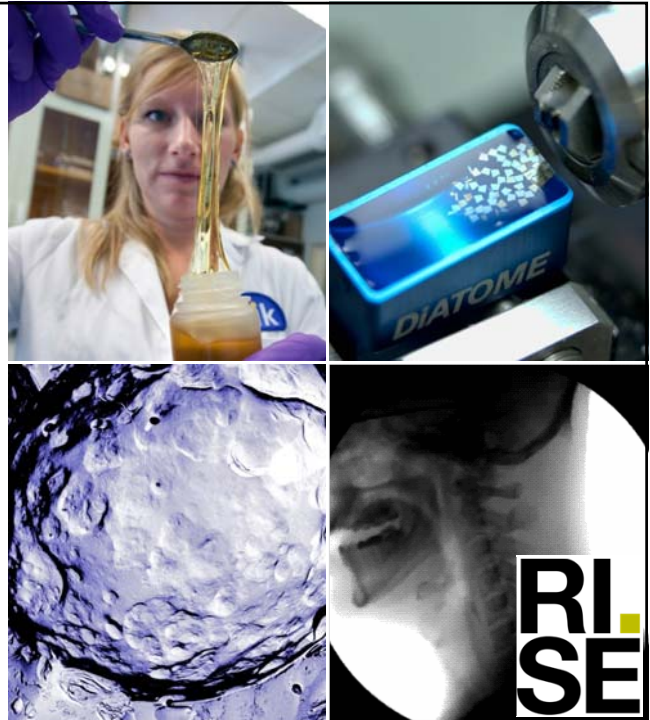


CONSUMER DEMANDS PERSONALIZED FOOD ENHANCING HEALTH OF ELDERLY CONSUMERS

Mats Stading
Waqas Qazi, Johan Wiklund, Olle Ekberg

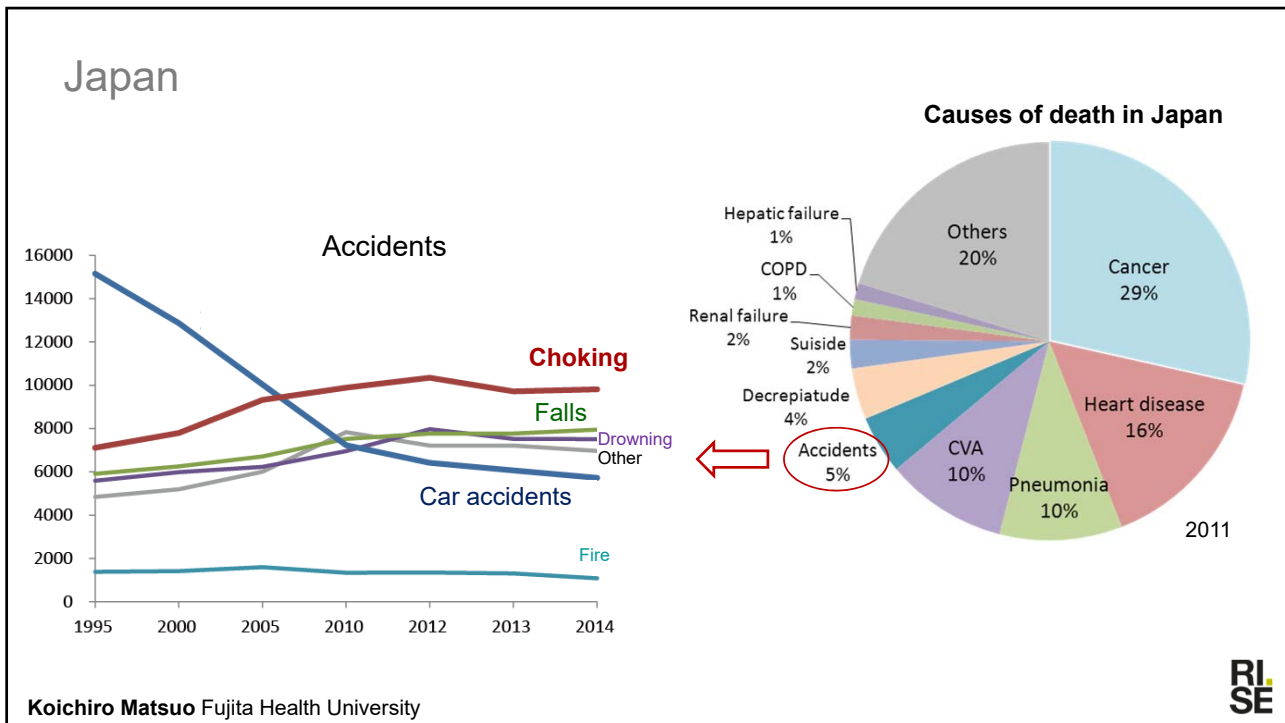
Research Institutes of Sweden
Bioscience and Materials
Agrifood and Bioscience



The challenge

- The population is ageing. In EU 19% is older than 65 years.
 - In Japan already 27% are older than 65.
 - Age related frailty is a serious threat to independent living and impairs quality of life.
 - A main cause is lack of proper food intake, i.e. sufficient energy as well as protein.
 - This leads to frailty and malnutrition which in turn leads to weight loss, sarcopenia
- ➔ finally to nursing homes, hospitalization, disabilities or even death.



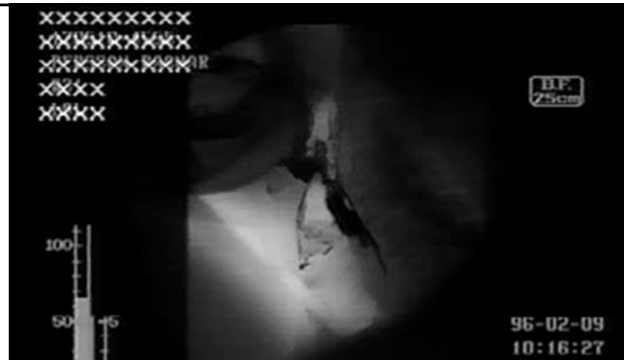


Swallowing disorders = dysphagia

Dysphagia is a common symptom after

- Stroke, dementia, Parkinsons' and other neurological diseases
- Lung disorders
- Different handicaps
- Cancer
- Head and neck injuries
- Age

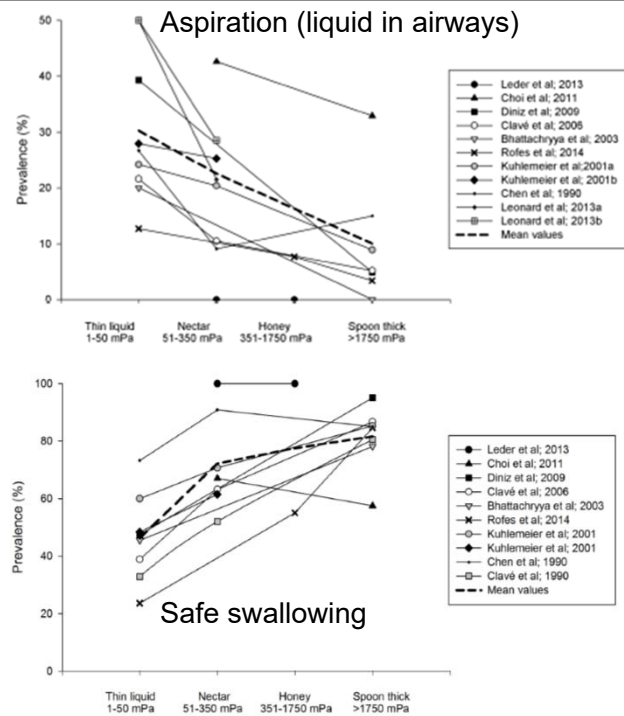
- 1,5 % of the whole population suffers from dysphagia
- 40% in the age segment 70+ suffers from dysphagia
- Malnutrition is a common. Health care costs: 900 million € in Sweden alone.



Dysphagia is treated by "thickening"

Possibly important rheological parameters

- Shear viscosity
- Yield stress
- Elasticity
- Other?



Current food alternatives for swallowing disorders

1. A common solution



Current food alternatives for swallowing disorders
2. Worst case solution



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Current food alternatives for swallowing disorders
3. A better solution



Photo from Findus

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4. An even better solution

- **Personalized nutritional food to stay healthy during aging**
- Aroma, taste and texture adopted to age impaired function
- Food to retain oral functionality to stay active during aging
- Food combined with exercise and social interaction



go independent

GoIndependent.se

GoIndependent.jp

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3D Food Printing

- A print head is directed to deposit a stream of a food, layer by layer, predetermined by a 3D model.
- Shape stability of the printed layers is either controlled by rheological properties, solidification upon cooling or hydrogel-forming extrusion.

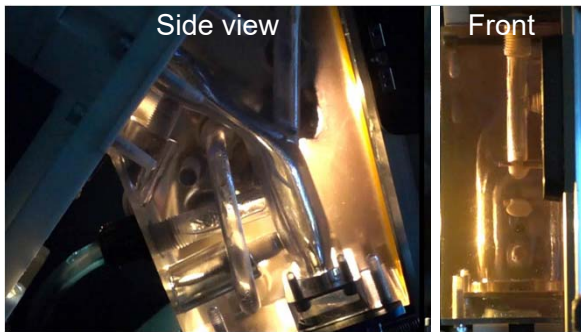


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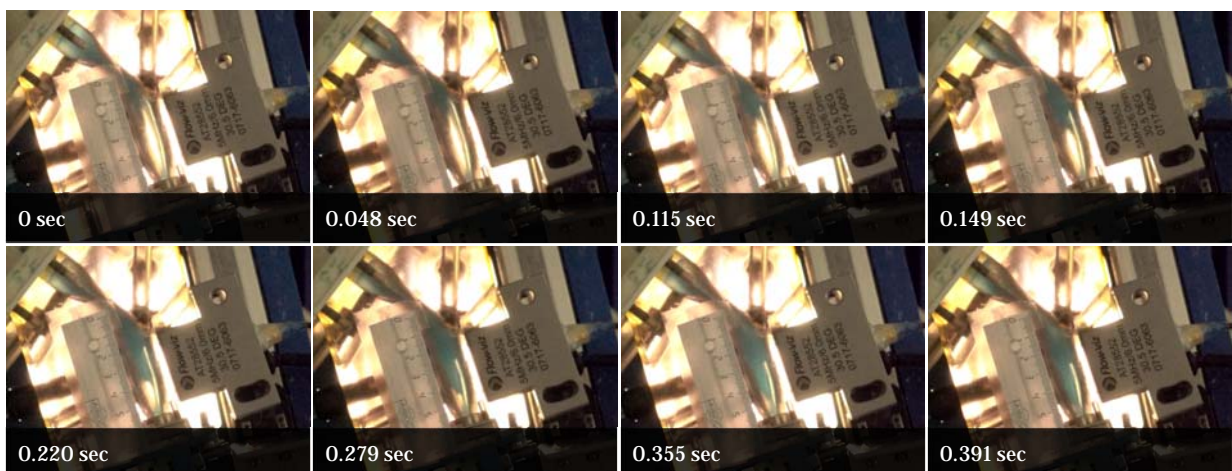
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The Gothenburg Throat

- A fixed bolus is injected, pressures along the tract are monitored and the flow profile determined ultrasonically.
- The openings to the trachea, esophagus and the nasopharynx are regulated.



Bolus flow



Nutlis thickener, 1 Pas at 50 s⁻¹



Conclusions

- The population is ageing
- Adjust food for elderlies, or even better personalize food
- In general: Safe, high energy and high protein **food** for elderly plus **exercise** and **social interaction** is necessary to avoid malnutrition → weight loss → frailty → nursing homes, hospitalization, and even death.

Questions?

Mail Mats.Stading@ri.se

