



The Role of Saliva in the Dynamics of Conversion of Food Particles to a Food Bolus and Bolus Swallowing

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role of Saliva in food bolus formation and Swallowing

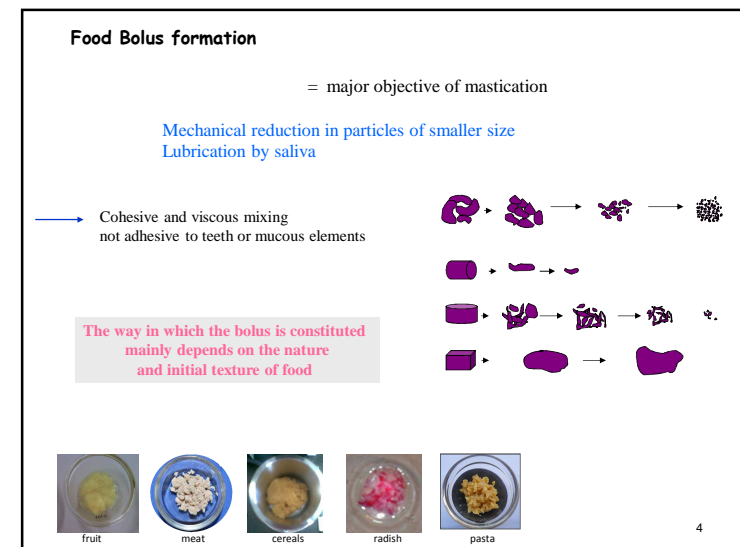
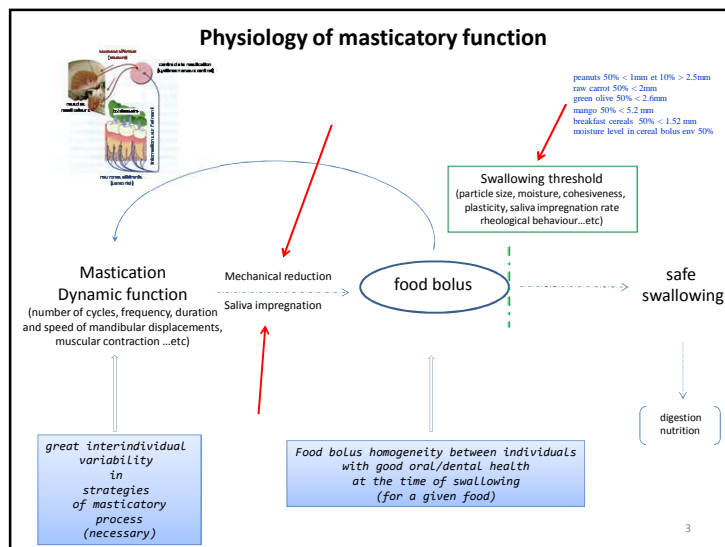
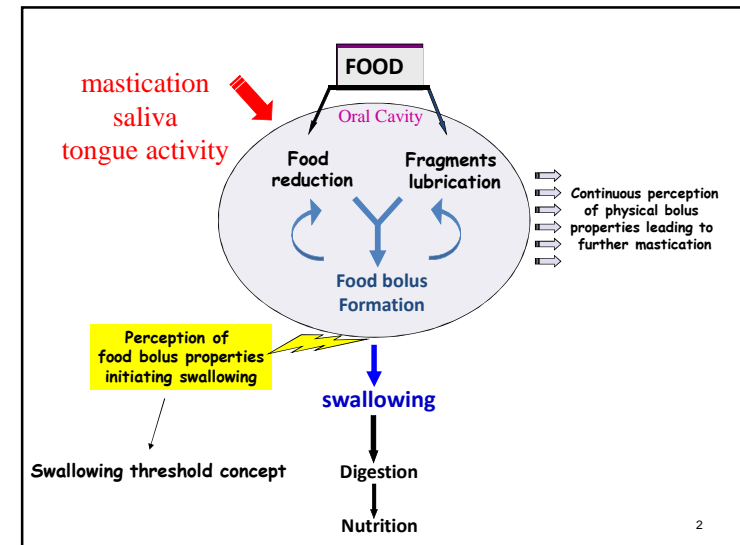
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Symposium: Food and saliva – the role of saliva in the eating process

IADR/PER
CONGRESS
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Swallowing threshold

Initiation of swallowing :

Food matrix disruption --- bolus particle size

A rigid food must be reduced in particles smaller than for a softer food

peanuts 50% < 1mm and only 10% > 2.5mm
 raw carrot 50% < 2mm
 green olive 50% < 2.6mm
 mango 50% < 5.2 mm
 breakfast cereals 50% < 1.52 mm

→ specific goal of teeth which act to break the food matrix

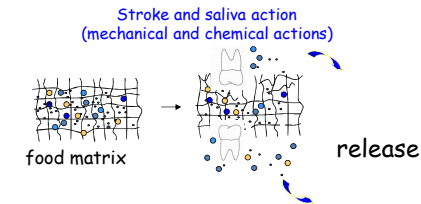
Bolus cohesiveness --- adhesiveness of particles together

balance between cohesiveness (particles together) and adhesiveness (particles to buccal elements)
 (difficult to measure by physical tests, can be estimated by empirical measurements)

→ specific goal of saliva which moistens the food and initiates digestion

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Release of compounds during matrix disruption



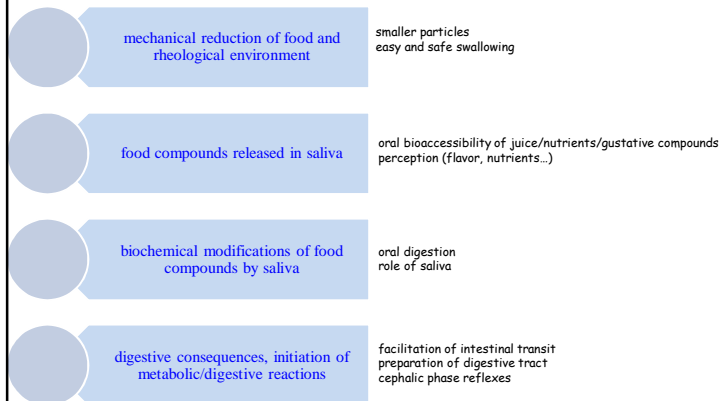
food matrix disruption

→ food compounds release
 juice, nutrients, flavor ...

Compound release (oral bioaccessibility)
 direct effect on perception
 direct effect in absorption
 indirect effect on metabolism

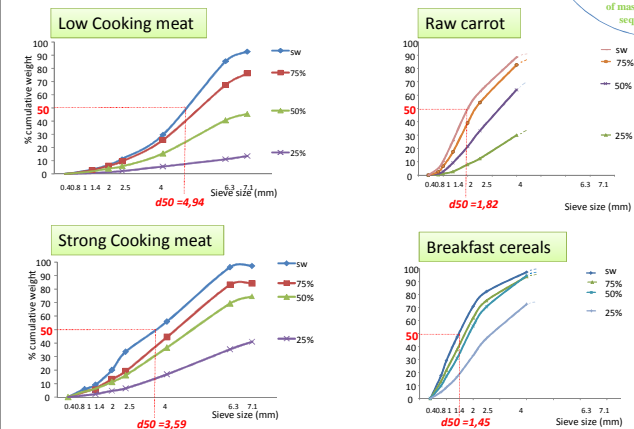
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Food bolus formation - role of mastication - role of saliva



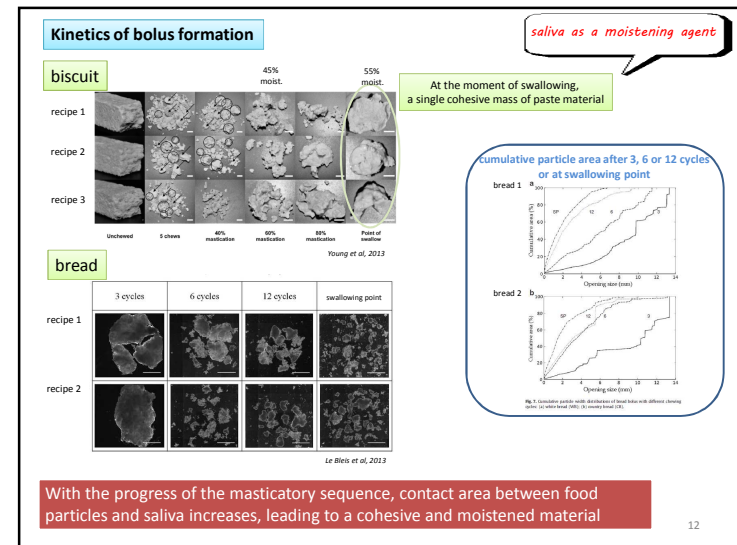
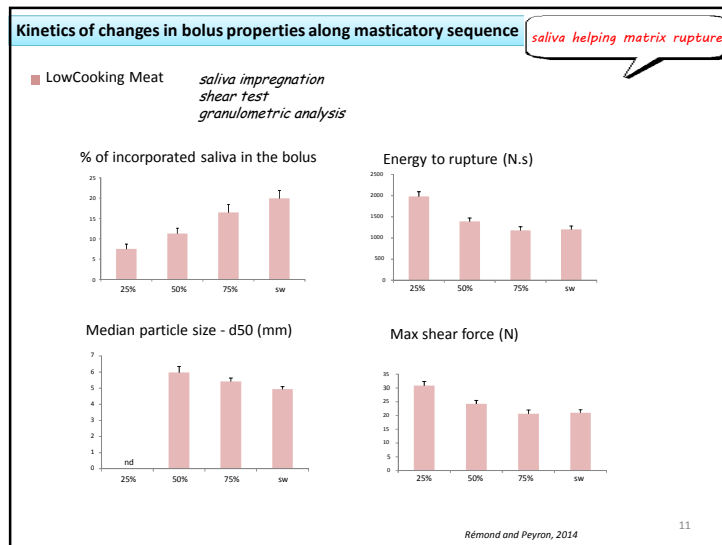
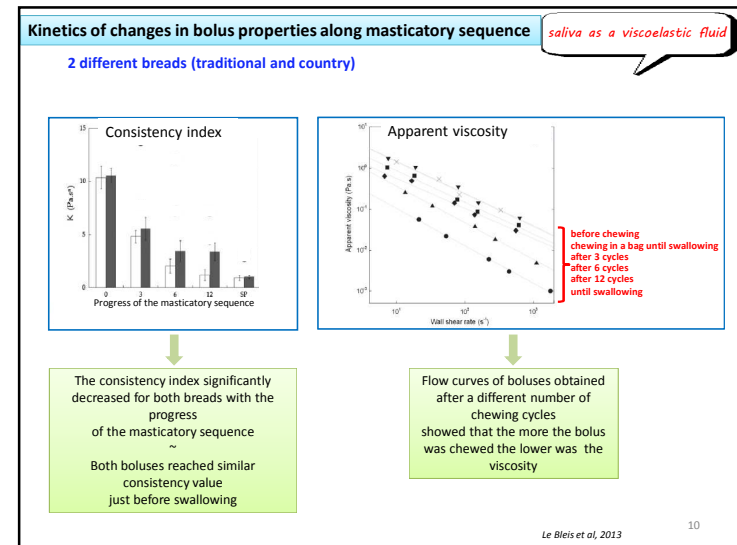
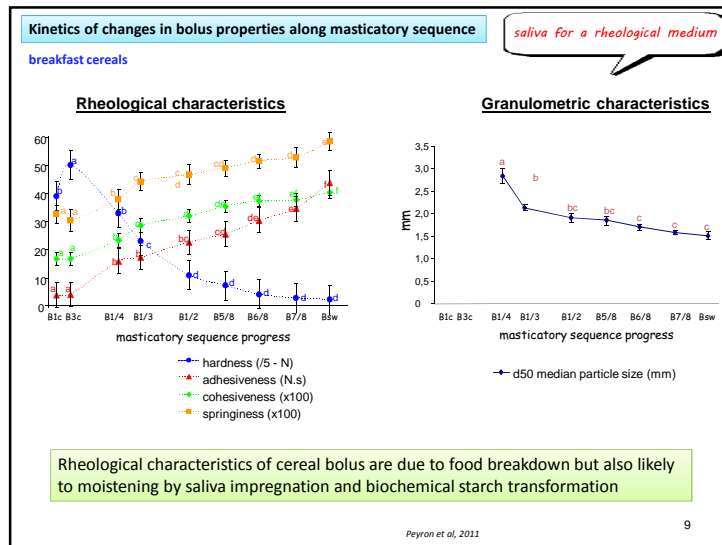
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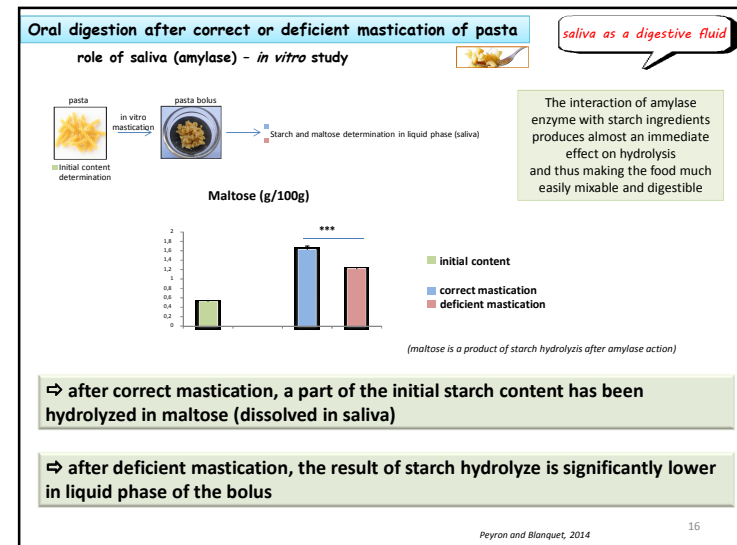
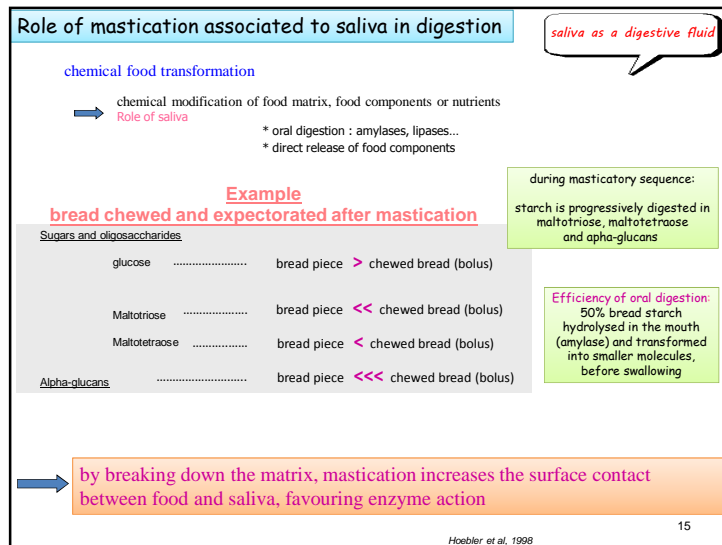
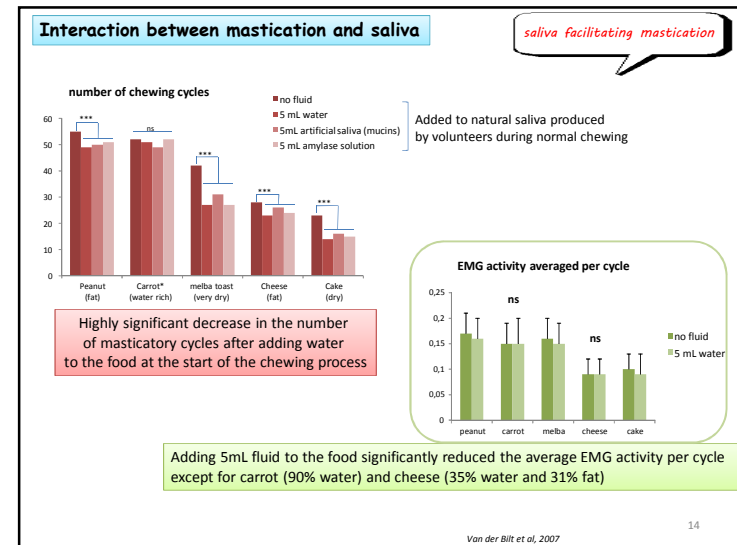
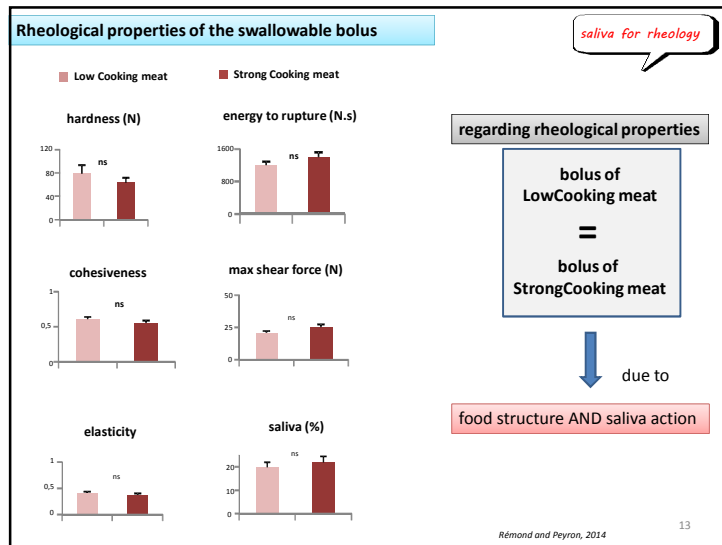
Particle size reduction with the progress of the masticatory sequence

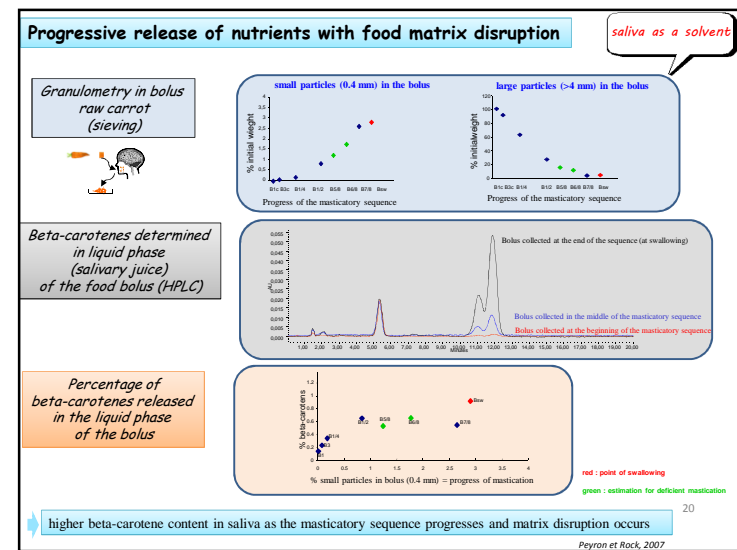
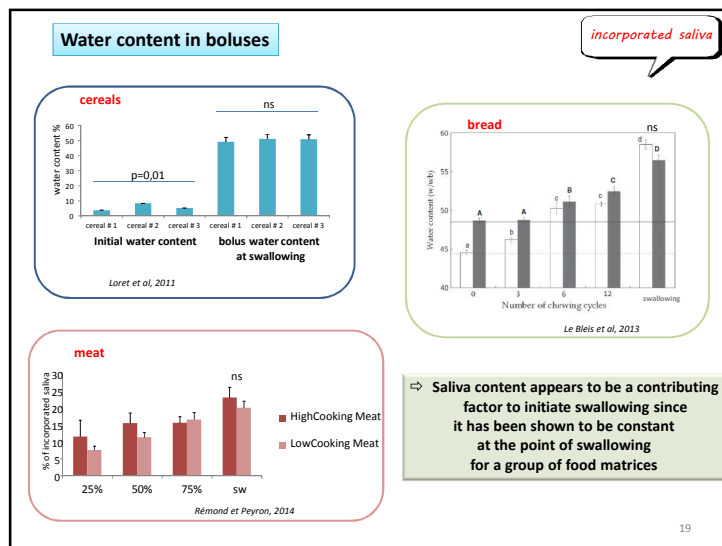
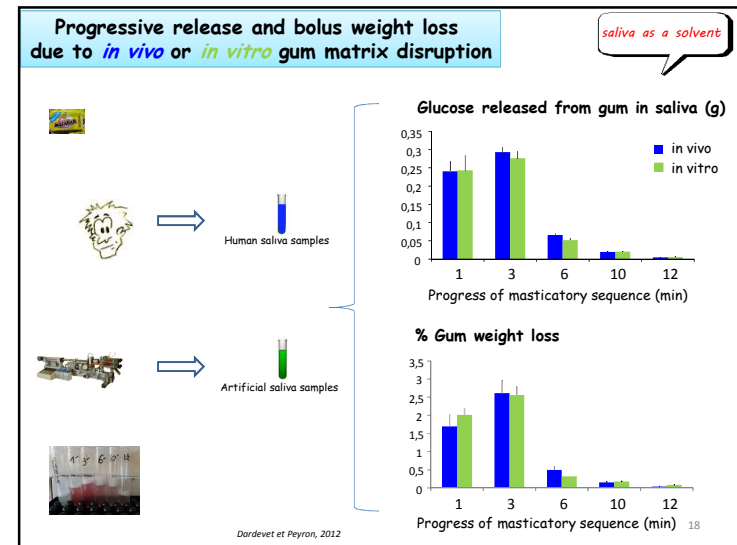
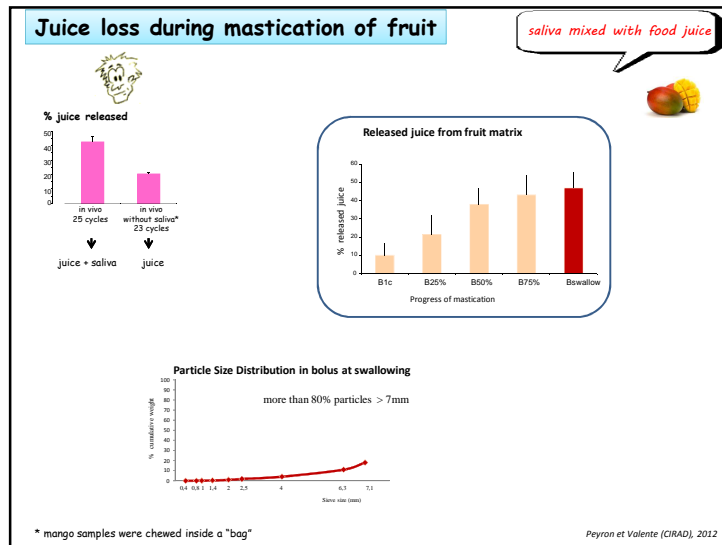


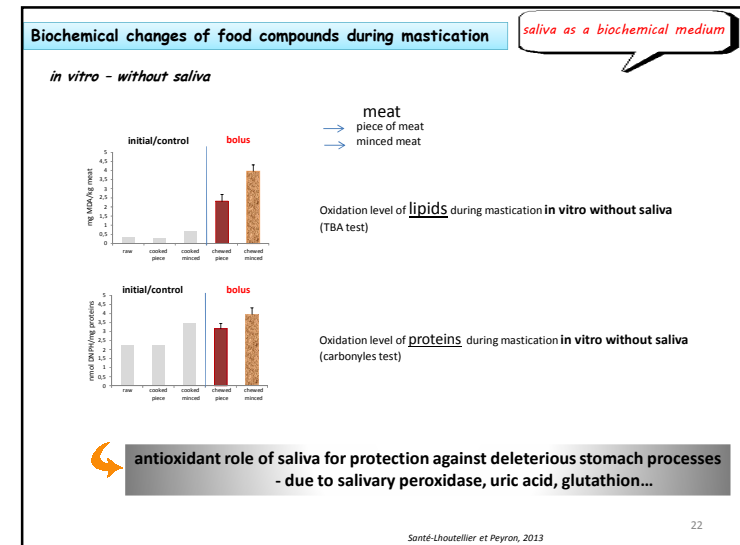
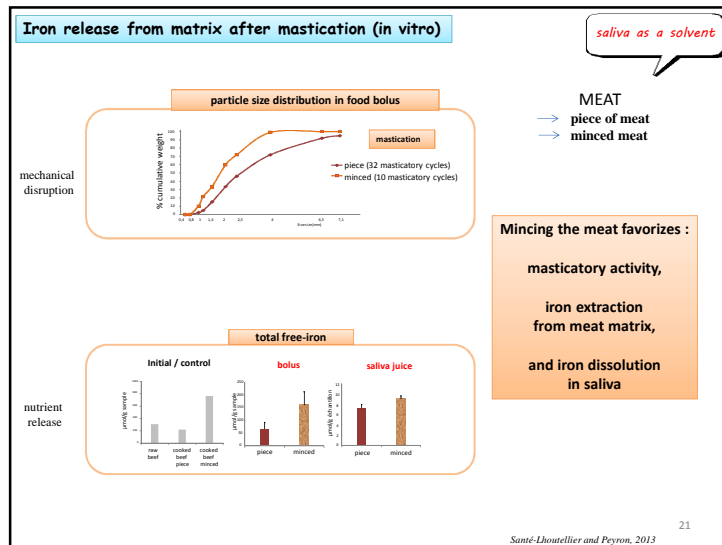
Meat bolus is swallowed with larger particles than raw carrot or cereals

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Saliva acts both as a media and a reservoir during bolus formation

saliva is **essential** during the food consumption

- boundary of friction coefficient lower than water
- lubrication of food particles (mucins)
- saliva and food component interaction

(potentiated by the concomitant increase in surface of contact of food particles with saliva)

interaction of saliva with the food still represents today a great challenge

physiological concepts : bolus formation and swallowing initiation

establishing correlations : physical properties of food / perception

establishing links between :
saliva composition, saliva properties, bolus properties, impact on masticatory strategies, swallowing

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Thank you for your attention

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