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DEVELOPMENT OF NATURAL SALIVARY SUBSTITUTES AND EVALUATION OF THEIR RHEOLOGICAL PROPERTIES USING AN *IN VITRO* MODEL

Y. Bugarin Castillo^(*), A. Avila Sierra, V. Mathieu, M. Ramaioli^(**)

Université Paris-Saclay, INRAE, AgroParisTech, UMR SayFood, 91120, Palaiseau, France

CONTEXT

- Xerostomia is usually described as a decrease in salivary flow caused by specific diseases, drugs, or therapies associated.^{1,2}
- The prevalence of xerostomia varies from 13 to 28% in the older population and increases up to 60% in patients living in long-term care facilities.²
- It can seriously impact the quality of life, altering speech, oral environment, and swallowing.^{1,2}

OBJECTIVE

To develop artificial saliva to be used in swallowing *in vitro* models in order to design tailored food textures for xerostomic patients.

MATERIALS & METHODS

Artificial Saliva

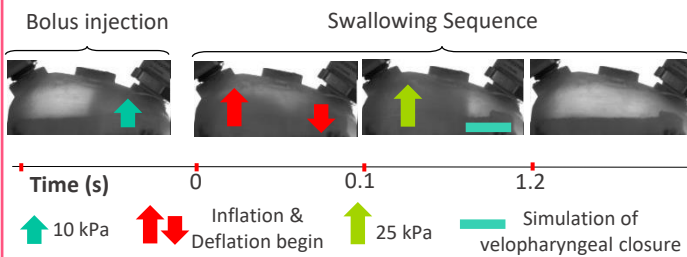
Flaxseed extracts at 0.25% and 0.7% dry matter were mixed with deionized water.

Apple Puree

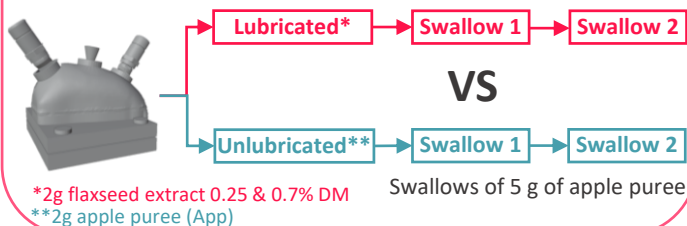
Commercial apple puree was used as a model food (Andros, France).

Soft-robotic *in vitro* setup

Soft robotics as a preliminary assessment to foster safety swallowing



In Vitro Swallowing

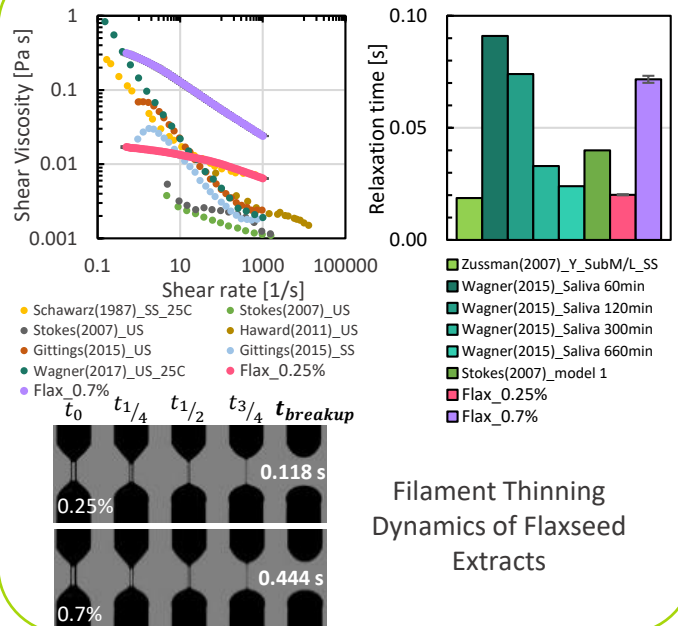


Rheological Characterization

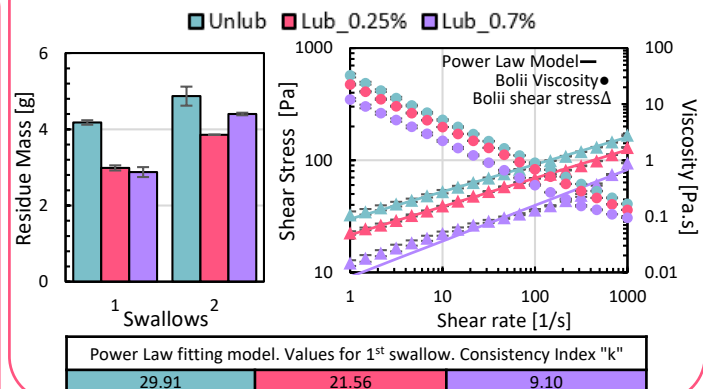


RESULTS

Rheological Characterization



Lubricated VS Unlubricated In Vitro Swallow



CONCLUSIONS

- The flaxseed extracts at 0.25% and 0.70% DM show shear-thinning behavior, with the 0.25% closer to human saliva.
- The relaxation time of both concentrations (0.25% and 0.70%) are in agreement with those obtained from human saliva.
- Residues decreased when flaxseed extracts are used suggesting a lubrication effect.
- The shear viscosity of *in vitro* bolus decreased using flaxseed extracts simulating human saliva behavior.
- Flaxseed extracts showed bolus' cohesiveness during the swallowing sequence.

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CONTACT

(*) Yurixy BUGARIN CASTILLO yurixy.bugarin-castillo@inrae.fr
(**) Marco RAMAIOLI marco.ramaioli@inrae.fr