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► **To cite this version:**

Yurixy Bugarin-Castillo, Alejandro Avila-Sierra, Vincent Mathieu, Marco Ramaioli. Development of natural salivary substitutes and evaluation of their rheological properties using an in vitro model. 12th Congress of European Society of Swallowing Disorders 2022, Sep 2022, Leuven, Belgium. 2022. <hal-03780659>

HAL Id: hal-03780659

<https://hal.science/hal-03780659v1>

Submitted on 19 Sep 2022

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

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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

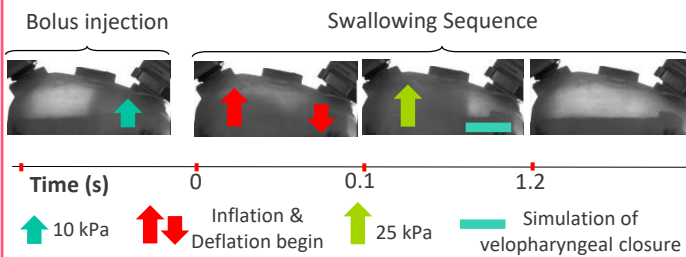
Flaxseed extracts at 0.25% and 0.7% dry matter were mixed with deionized water.

Apple Puree

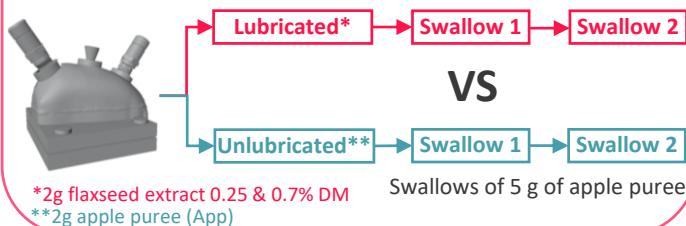
Commercial apple puree was used as a model food (Andros, France).

Soft-robotic *in vitro* setup

Soft robotics as a preliminary assessment to foster safety swallowing

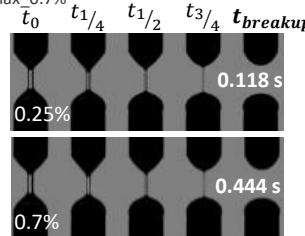
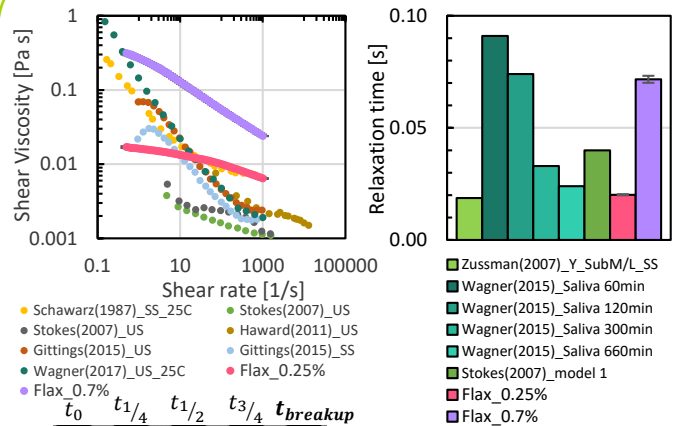


In Vitro Swallowing



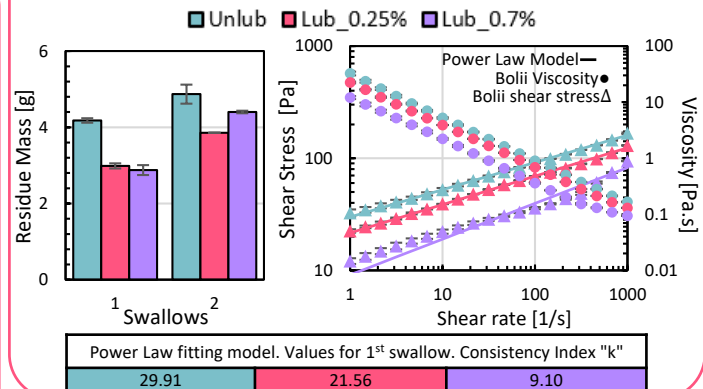
RESULTS

Rheological Characterization



Filament Thinning Dynamics of Flaxseed Extracts

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.

References

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Rheological Characterization

Shear



Extensional

