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# Effect of structural parameters on rheological behaviour of reconstructed puree

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## Context

In food industry, controlling texture allows to generate innovative products and to deal with consumer expectations or physical issues (ex. swallowing problems due to ageing).



Source: <http://www.annabelkarmel.com/recipes/first-apple-puree>

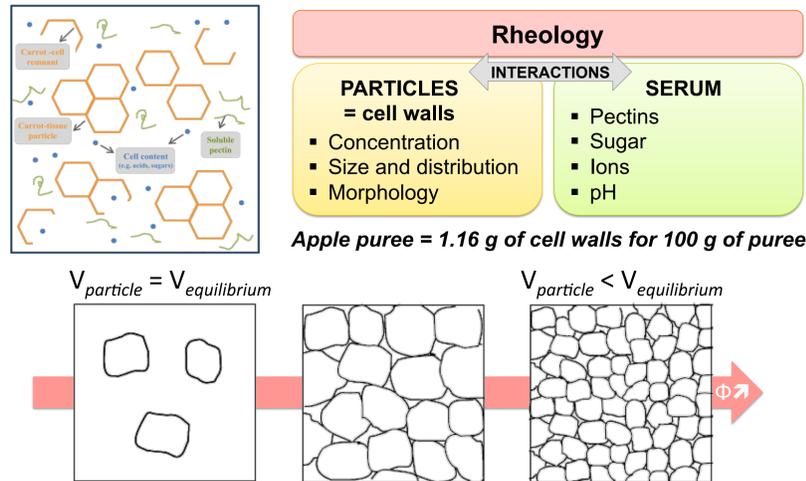


Source: [care4brain.com/tag/intervention-for-demented-elderly/](http://care4brain.com/tag/intervention-for-demented-elderly/)

Research question: **How does fruit suspension structure impact its behaviour ?**

## Strategy

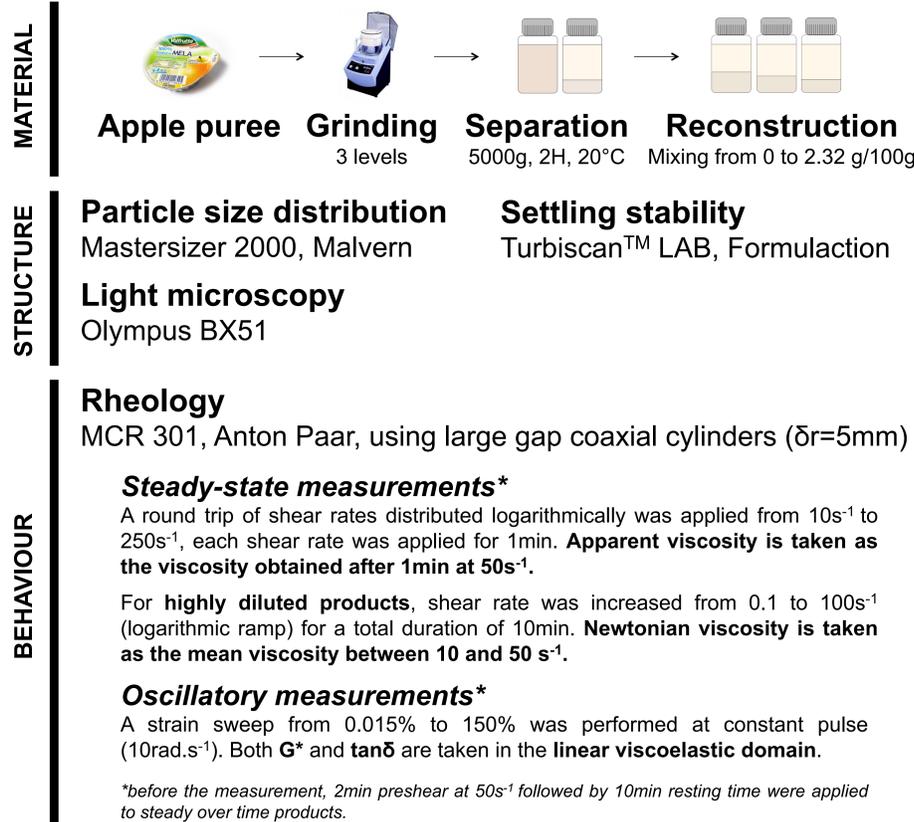
Fruit puree = vegetable deformable cells suspension



Construction of apple purees varying in :

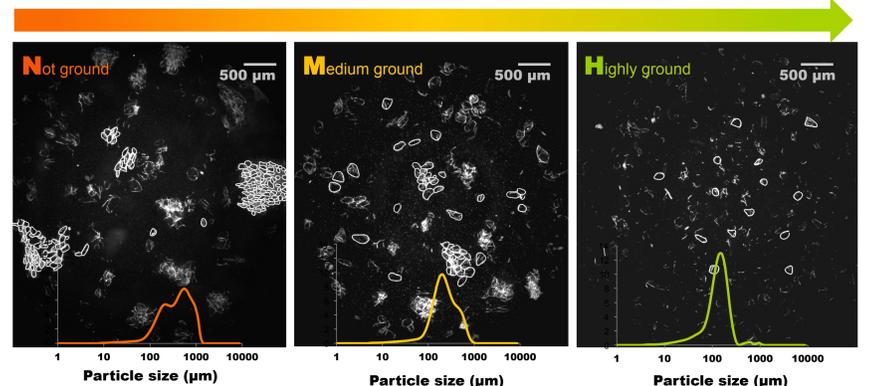
- ✓ particle size ( , , and )
- ✓ particle concentration (from 0 to 2.32g/100g)

## Material & Methods

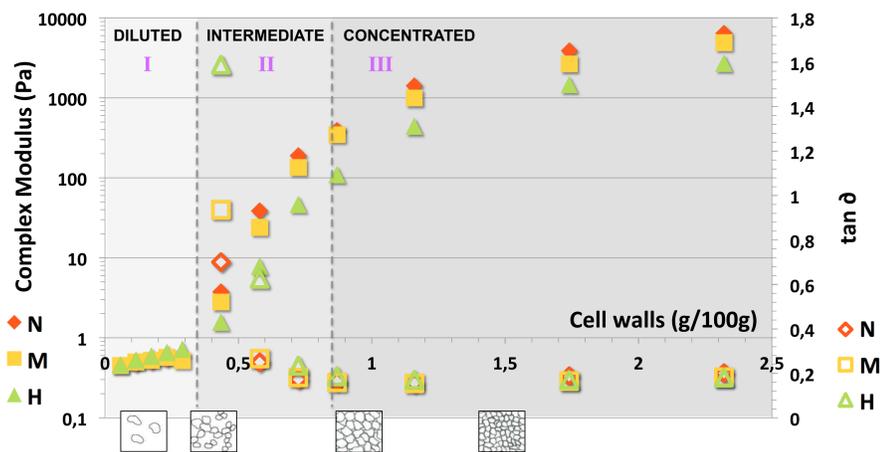
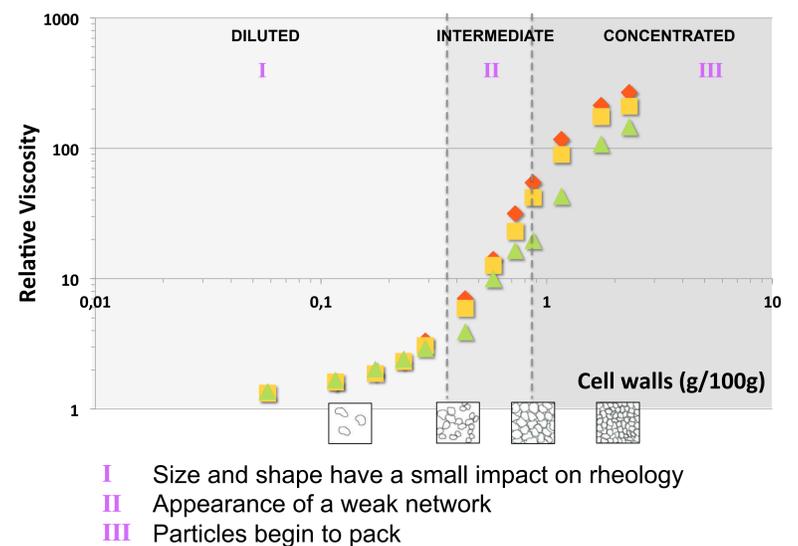


## Results

Impact of grinding process on cells structure and size



Impact of cell structure and concentration on rheological behaviour : 3 concentration domains (I, II, III)



## Conclusion & Perspectives

- Rheological measurements have been performed on a wide range of concentrations with variable particles size distribution.
- Three concentration domains are visible, in both flow and dynamic measurements:
  - ✓ **Diluted regime:** Newtonian flow. Particles size and shape have little effect on rheology.
  - ✓ **Semi-diluted regime:** Existence of a weak network between particles.
  - ✓ **Concentrated regime:** The dependence between viscosity and concentration decreases. Particles begin to pack and their volume becomes lower than their equilibrium volume.
- Next step:** determine the volume occupied by the particles in each domain, access to  $\Phi$ , determine the influence of the continuous phase and the influence of intrinsic properties of the particles.

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## Contact

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