

Impact of whey protein aggregates on texture perception of low-fat set-type yogurts

École Nationale Nantes Atlantique Vétérinaire, Agroalimentaire et de l'Alimentation

Santé et alimentation au cœur de la vie

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Yogurt

enriched in

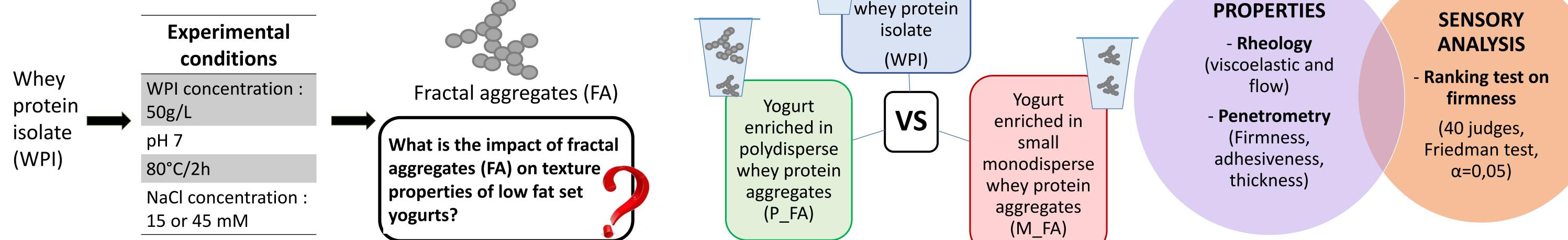
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CONTEXT

MATERIALS AND METHODS

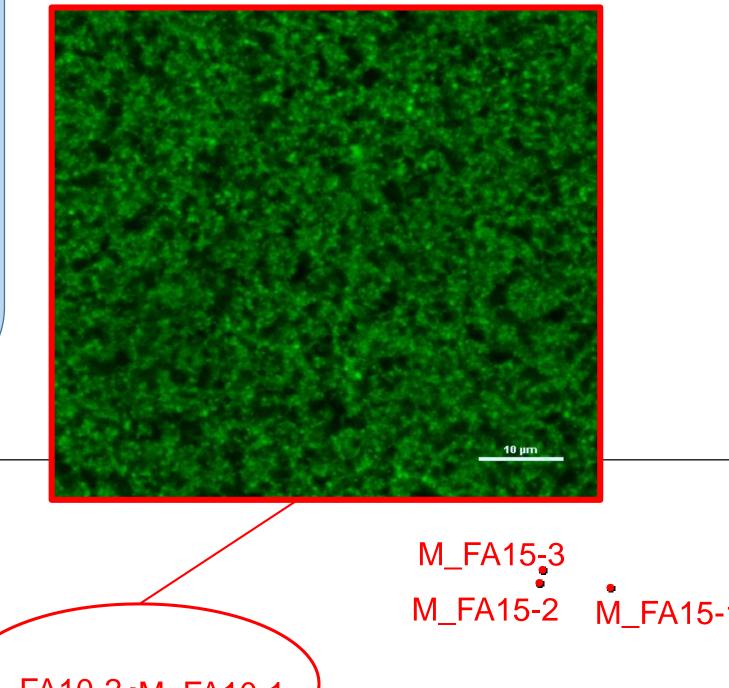
TEXTURAL

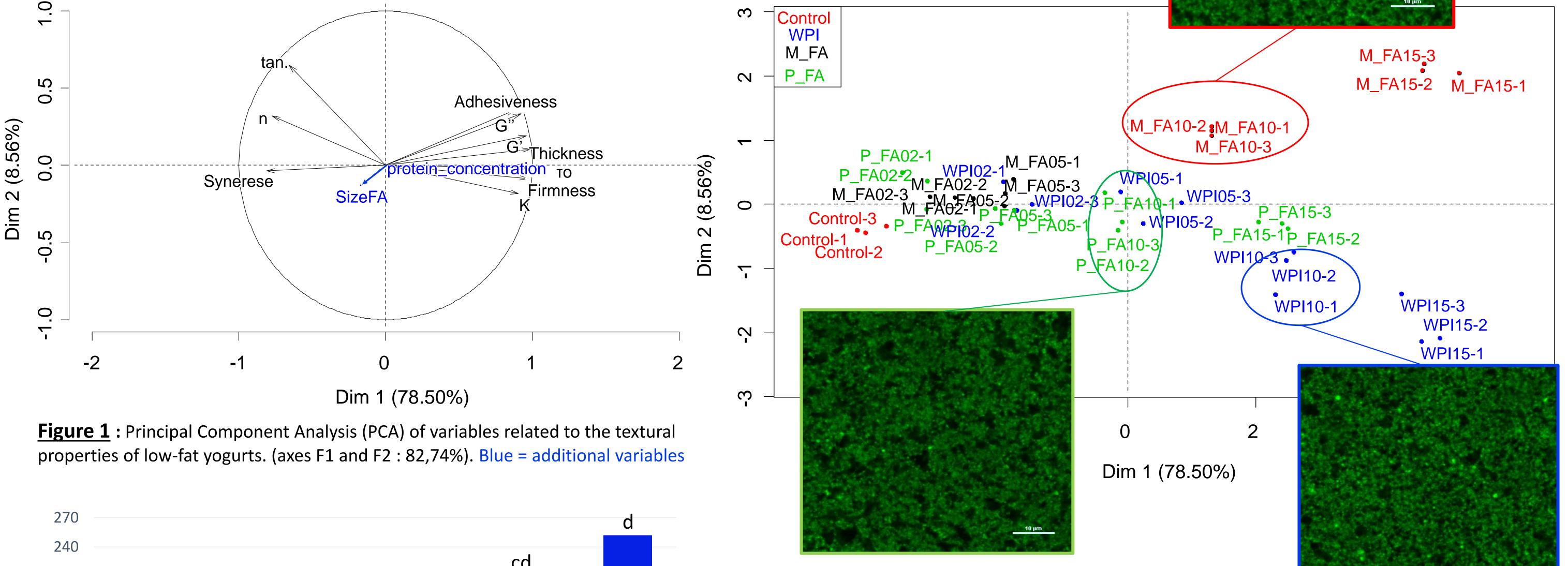
Valorization of milk proteins (PROFIL 2013-2019) to promote their multifunctional properties



RESULTS AND DISCUSSION

- **PCA on textural properties** (figure 1 and figure 2) :
 - The protein concentration is highly correlated with the rheological and textural properties (figure 1)
 - At the same concentration, the type of protein has an impact on the textural properties of yogurts (figure 2)
 - The addition of FA or WPI does not have an impact on syneresis (figure 1).
 - CLSM images illustrate the difference between the yogurts, showing a more opened structure of the protein network when P_FA are added (figure 2).
- **Sensory analysis** (figure 3) :
 - \nearrow of protein concentration \rightarrow \nearrow of perceived firmness
 - Yogurts enriched in M_FA tends to be perceived as less firm than yogurts enriched in WPI





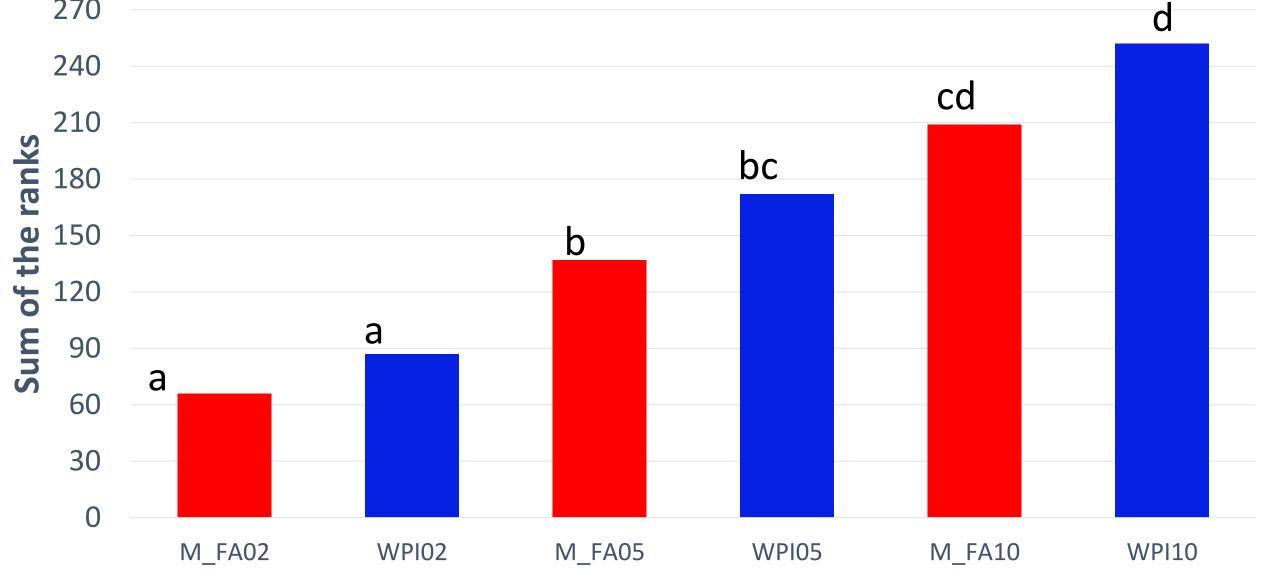


Figure 3 : Results of the ranking test on firmness of low-fat yogurts.

Figure 2: Individuals factor map (PCA) combined with confocal laser scanning microscope (CLSM) images of the protein network of low-fat yogurts.

Putting the Principal Component Analysis (PCA) (figure 1) into perspective with the sensory results (figure 3) highlights the correlations between the textural properties of low-fat yogurts and the impact of the addition of WPI, M_WPA or P_WPA in different concentrations (from 0,2% to 1,5%).

CONCLUSIONS AND PERSPECTIVES

- Fractal aggregates can be used to modulate low fat set yogurt texture
- The impact of polydispersity of FA on the textural properties of yogurts can be explained by the different network structures \bullet
- There is a good correlation between the perception of firmness and the textural properties of the yogurts
- Descriptive sensory analysis will be conducted to characterize and quantify other texture attributes (smoothness, adhesiveness, thickness ...)
- Fractal aggregates could be interesting to produce high-protein yogurts while keeping a smooth texture



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