

## Development of a prebiotic strawberry preparation for the dairy industry

Daniela A. Gonçalves<sup>1, 2</sup>, Vitor D. Alves<sup>3</sup>, José A. Teixeira<sup>1, 2</sup>, **Clarisse Nobre<sup>1, 2</sup>**

<sup>1</sup>Centre of Biological Engineering - University of Minho, Braga, Portugal, <sup>2</sup>LABELS –Associate Laboratory, Braga, Guimarães, Portugal, <sup>3</sup>Frulact, Ingredientes para a industria alimentar, Maia, Portugal

Background: Food industry has been pressed to develop products with reduced sugar and caloric value, with the challenge of keeping rheological and sensory characteristics. Herein we developed a functional strawberry preparation for the dairy industry, by in-situ enzymatic conversion of sucrose into prebiotic fructo-oligosaccharides (FOS). Methodology: Two enzymatic complexes (Pectinex®Ultra SP-L and Viscozyme®L) were applied in the preparation. Operational parameters were optimized to maximize FOS yield: temperature, pH, enzyme:substrate ratio (E/S). Rheological, physicochemical and functional properties (INFOGEST gastrointestinal digestion protocol) were evaluated. Results: At optimal conditions (60 °C, pH 5.0), Pectinex produced 265±3 g/L FOS, yielding 0.581±0.006 g(FOS)/g(initial.GF) after 7 h reaction (E/S:1/40); and Viscozyme produced 295±1 g/L FOS, yielding 0.664±0.004 g(FOS)/g(initial.GF) after 5 h (E/S:1/30), both resulting in preparations with 50% (w/w) FOS. The caloric value was reduced 24%, including 80% sucrose reduction. Differences in colour, water activity and °Brix were not relevant, while consistency and viscosity decreased ≈70% and pH increased from 4.4 to 4.7. FOS showed resistance to gastrointestinal digestion; only kestose was slightly hydrolysed at intestinal phase. Conclusions: A prebiotic strawberry preparation was successfully produced at lab scale, by in-situ enzymatic conversion of caloric into functional sugars. Next, the process will be scaled-up at industrial level.