

Title :Vacuum technology for innovative based-meringues textures.

Jean-Baptiste SCOLAN[1,2], Franck CORLAY[1], Raphael HAUMONT[2]
[1]Mademoiselle Desserts, 14 place Georges Pompidou 78180 Montigny le Bretonneux, France
[2]French Center of Culinary Innovation, ICMMO, CNRS UMR 8182, Paris-Saclay University 91400 Orsay (France)

Food is usually cooked at atmospheric pressure. Current "sous-vide" technique is food in vacuumized pouches cooked using controlled heating. Hence, food is cooking under partial vacuum inside the bag but atmospheric pressure outside.
This study aims at using a prototype-hermetic oven linked to a vacuum pump. Pressure inside the oven can decreased up to 100 mbar. Water boiling point, proteins interactions [1] or proteins gelling properties [2] are modified. New structures are obtained with variations in thermodynamic couple Temperature-Pressure.
We focus on meringues and based-meringues recipes. Various temperature-pressure couples are fixed for cooking. Meringue density decreases while pressure decreases following perfect gas model between 1000 and 600 mbar. 500 mbar constitutes a critical value. Texture-Profile-Analysis measurements highlight that penetrability strength inside those meringues is lower than classic ones, as the work needed to penetrate the meringue. Finally, critical cooking parameters (pressure and temperature) are found to optimize formulation and have an ultra-aerated texture of meringue (article in progress). We then mix the meringue preparation with egg yolk and floor to obtain a "gênoise". After vacuum cooking, we obtain innovative textures. This work can be extended to other issues: decrease the sugar rate in recipes or else create new textures.

[1] M. Li et al. Food Chemistry 143 (2014) 9–16
[2] Y. Ma et al. Food Chemistry 245 (2018) 557–563

Biography

I am a PhD student at Paris-Saclay University in France. The doctoral project is carried out in collaboration with Mademoiselle Desserts (MDesserts) and the French Center of Culinary Innovation (FCCI). MDesserts is a french company implanted in Europe and selling freeezed bakery products all around the world. The FCCI is a laboratory created by the Michelin-stared chief Thierry MARX and Raphaël HAUMONT, Profesor at Paris-Saclay University.
The aim of my project is to develop new bakery products and new textures using "sous-vide" cooking. I study the relationships beetween texture and structure of products.

Presenting author details
Full name: SCOLAN Jean-Baptiste
Email Address: jean-baptiste.scolan@u-psud.fr
Contact number: +33169157165
Twitter account:
Linked In account:
Session name/ number: Emerging Food Technologies and Concepts / Track 14
Category: Oral presentation