

New technological strategies to develop sweet bakery for children with low sugar content

Rossella Caporizzi

Department of Science of Agriculture, Food and Environment (SAFE), University of Foggia, Foggia, Italy.

Abstract

A high consumption of sugar is considered one of the main causes of excessive calorie intake and, consequently, a major risk factor for overweight and obesity in children and adolescents. The WHO/FAO directives state that the daily free sugars consumption should not exceeds the 10% of the total energy intake. Alarmingly, often children surpass such limit, due to their preference in sweet bakery, suggesting that this products should be a prime target for reducing sugar intake among children. In the effective sugar reduction, consumer acceptability is critical and this is particularly relevant in the case of children, who have a heightened propensity for sweet taste. Notwithstanding, in bakery products sugar not only acts as a sweetener, but also affects other sensory and physical attributes, e.g. texture, color - being involved in the Maillard reaction-, humidity, incorporation of air, etc. Three different technological strategies has been applied simultaneously to reduce the quantity of sugar: addition of vanillin, as a flavor enhancer; heterogeneous distribution of sugar, through layering of food formula with various concentration of that ingredient; different particle size of added sugar. For the first time, an integrated approach for sugar reduction was investigated.

**Conclusion:** Reducing the added sugar content of about 30% led to changes in physical properties as well as sensory characteristics perceived by children. Nevertheless, average overall liking scores were always high when the three strategies were combined, indicating a positive hedonic attitude towards the products. This stressed the feasibility of this integrated approach to decrease sugar intake at the population level. Sure enough, sweetened backed products are popular foods among children. Of the various strategies including nutritional education, food taxes, etc. to reduce sugar intake, the combined approach of three different technological strategies may be an effective method because the added sugar content of products is reduced without consumers' awareness and without changing their eating behaviour.



Department of the Sciences of Agriculture, Food and Environment

Biography:

Rossella Caporizzi has completed her PhD in May 2018 in “Management of innovation in the agricultural and food systems of the Mediterranean Region” from the University of Foggia, Italy. Currently, she’s



conducting research activities at the same University by studying new technological approach for the development of personalized foods. Rossella research interests are: customization of foods, nutritional education, 3D Food Printing, antioxidant activity of cereals, coffee antioxidant activity and relation with health, food microstructure, extrusion process.

Speaker Publications:

- Rossella Caporizzi et al; Programmable texture properties of cereal-based snack mediated by 3D printing technology, May 2020.
- Rossella Caporizzi et al: Extending the 3D food printing tests at high speed. Material deposition and effect of non-printing movements on the final quality of printed structures, Dec 2019.
- Rossella Caporizzi et al: Reuse of spent espresso coffee as sustainable source of fibre and antioxidants. A map on functional, microstructure and sensory effects of novel enriched muffins, Nov 2019.
- Rossella Caporizzi et al: From Plant Tissue microstructure to new foods with novel sensory perception. An example of biomimetics of food mediated by 3D printing. 8th International Symposium, Nov 2019.

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