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BOOK OF ABSTRACTS

JAHORINA
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THE USE OF 3D-PRINTING TECHNOLOGY IN THE FOOD INDUSTRY

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Abstract

The development of 3-dimensional printers has allowed a great development in many other subsidiary and parallel areas, from the industrial production to the final user. This technology has also found a good deal of applicability in the food supply chain, particularly in areas of industrial processing, culinary preparations or even consumer applicability. Hence, the aim of this work is to make a balance of these applications, which is pivotal for the success of this technology, and to show its potentialities in the domain of food. The findings suggest that, although 3D printed food is still a novel trend, its adoption by professionals and consumers is rising and expected to experience a huge growth in the future, powered by the technological developments allied to food properties design. The foods that can be printed in 3D are limited and that is dependent on the food processing required for each food. Material extrusion is by far the most common process for 3D printing food. This requires paste-like materials to work with (inputs) such as purées, mousses, and other viscous foods like, for example, chocolate ganache. Although 3D printers are particularly useful for architecting intricate food shapes and designs, it must be kept in mind that, in most times, they do not actually cook the ingredients. In this way, either the edibles are ready for consumption or, alternatively, they must be cooked in a separate equipment after the printing process finalizes. However, there are exceptions, and a case can be cited in which the 3D-printig is coupled to heating – the case of the PancakeBot, which is a machine that makes pancakes by extruding the batter directly onto a hotplate. Some advantages of 3D-printing include easy reproducibility, unconventional food production and consumption, or personalization of meals. Nevertheless, there are also disadvantages, like the time necessary to print one individual food item. For example, while a very simple six-layer design can be printed in a sort time (7 minutes), more detailed food designs take more than 45 minutes per unit. This can compromise scale up of the technology from laboratory to industrial scale. In conclusion, this technology has much to offer to the food sector, either at the industrial level or for culinary preparations, and the future holds a great deal of opportunities to further explore its applications.

Key words: *food processing, modern technology 3D-printing, industrial process.*

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