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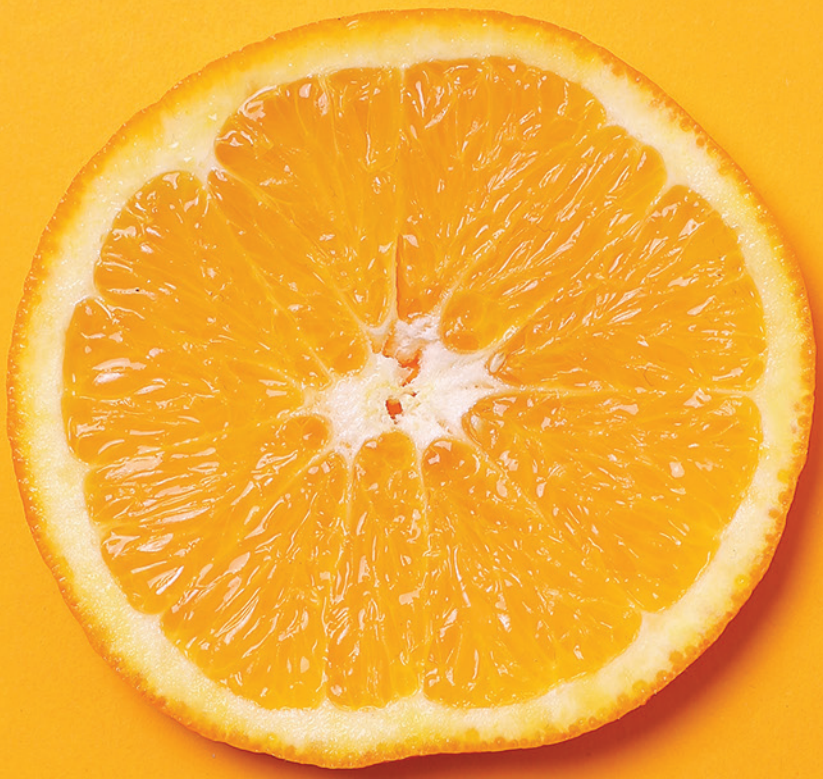

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3D FOOD PRINTING APPLICATIONS RELATED TO DYSPHAGIA: CURRENT SITUATION ANALYSIS[1]

Hürmet KÜÇÜKKATIRCI BAYKAN, Gaye SABAN

Türkiye

Abstract: Dysphagia, a stroke-related condition causing disrupted swallowing, can lead to fatal consequences like suffocation and pneumonia, particularly in the elderly (1). Texture-modified foods are a part of medical nutrition therapy in dysphagia (2). Restriction resulting from limited food options (texture of many foods cannot be changed) brings the risk of malnutrition. Malnutrition is particularly risky in the geriatric population (3). 3D food printing, a new technology, has the potential to enhance the attractiveness and consumability of textured foods, potentially aiding in increased food intake in individuals with dysphagia (4). With extrusion-based printing, protein (pork and beef) and vegetable products (peas, carrots, and bok choy) were 3D-printed in accordance with the texture categories recommended by the International Dysphagia Diet Standardisation Initiative (IDDSI) (5). Another exciting development in this technological process is 4D food printing, which can make foods more consumable by providing color change and flavor release (6). On the other hand, the ultra-processed nature of 3D-printed foods poses a nutritional concern as it negatively impacts food digestion and the gut microbiome. There are approaches to address this concern, such as the addition of probiotics and hydrocolloids increase the viscosity of gastric content in foods (4). The fact that it is not known how multiple processes, including freeze-drying, cooking, crushing, mashing, pureeing, sieving, and extrusion, affect the nutrient content, digestibility, and health of the consumer's gut microbiome when 3D printed food is produced brings many uncertainties and concerns. More research on 3D food printing is needed to address health concerns.

Keywords: Dysphagia, Texture Modified Food, Geriatrics, 3D Food Printing

[1] ORCID NO: 0000-0002-1702-2586, 0000-0005-4586-6427