

Euro Biotechnology 2021: A current perspective on the impact of cold plasma treatment on the main nutritional parameters of different vegetal matrices - Tulcan Camelia, King Michael of Romania, Romania

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Abstract

Introduction and aim: Vegetal matrices, in the form of consumer products, contain many nutritional compounds including vitamins, proteins, lipids and carbohydrates. In addition to their nutritional capacity, all these constituents are conducive to the growth and reproduction of a wide range of microorganisms. In terms of product processing, pathogen contamination is almost unavoidable along the entire farm-to-consumers route. The effective protection of the food sources is impossible due to the permanent contact with various types of foodborne pathogens. Over the past decade, new methods of combating food contamination have been identified worldwide. Of these, cold plasma has gained substantial interest for its non-thermal implication in food processing technology. The applicability of cold plasma varies from toxin removal to enzyme inactivation, but its key function is food decontamination, via microorganism complete elimination. In various studies, cold plasma technology has shown effective results against bacterial agents such as *Escherichia coli*, *Listeria monocytogenes*, *Salmonella typhimurium* and *Staphylococcus aureus*. However, during the decontamination treatment, the main quality parameters of the raw material can undergo various changes that can alter their nutritional capacity. This review aims to provide an overview of the changes that the main bioconstituents in the structure of plant materials undergo during the cold plasma decontamination process. The study focuses on the analysis of their nutritional capacity (identification of changes in the structure of proteins, vitamins, lipids, antioxidants, and pigments such as carotenoids or anthocyanins), the enzymatic profile (changes in the peroxidase, polyphenol oxidase, pectin methylesterase, or glucose oxidase activity) as well as other constituents such as minerals or carbohydrates.

Biography

Camelia Tulcan is the Associate Professor at Biochemistry Department, Faculty of Veterinary Medicine, Timisoara and Coordinator of Antioxidant Research Lab-Horia Cernescu Research Unit. She has expertise in oxidative stress evaluation in different physiological or pathological condition and is involved in management team of research and infrastructure projects and in implementation of quality management systems.

Bottom Note: This work is partly presented at 25th European Biotechnology Congress at September 27-28, 2021 | Webinar

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