

## Cold Atmospheric Plasma Manipulation of Proteins in Food Systems - DTU Orbit (09/11/2017)

### Cold Atmospheric Plasma Manipulation of Proteins in Food Systems

Plasma processing has been getting a lot of attention in recent applications as a novel, eco-friendly, and highly efficient approach. Cold plasma has mostly been used to reduce microbial counts in foodstuff and biological materials, as well as in different levels of packaging, particularly in cases where there is thermal sensitivity. As it is a very recent application, the impact of cold plasma treatment has been studied on the protein structures of food and pharmaceutical systems, as well as in the packaging industry. Proteins, as a food constituent, play a remarkable role in the techno-functional characteristics of processed foods and/or the physico-chemical properties of protein-based films. At the same time, some proteins are responsible for reduction in quality and nutritional value, and/or causing allergic reactions in the human body. This study is a review of the influences of different types of plasma on the conformation and function of proteins with food origin, especially enzymes and allergens, as well as protein-made packaging films. In enzyme manipulation with plasma, deactivation has been reported to be either partial or complete. In addition, an activity increase has been observed in some cases. These variations are caused by the effect of different active species of plasma on the enzyme structure and its function. The level and type of variations in the functional properties of food proteins, purified proteins in food, and plasma-treated protein films are affected by a number of control factors, including treatment power, time, and gas type, as well as the nature of the substance and the treatment environment.

### General information

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Organisations: National Food Institute, Research Group for Food Production Engineering

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