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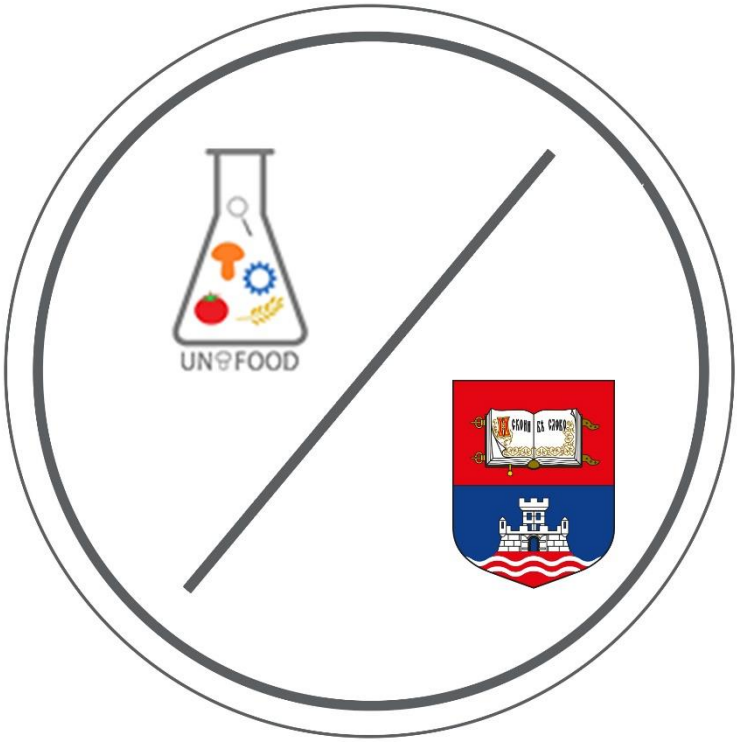

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INFLUENCE OF IMMUNE ACTIVITY OF COR A 9 FROM RAW AND ROASTED HAZELNUTS AFTER GASTRIC DIGESTION

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Cor a 9 is one of the most common hazelnut allergen, a non-glycosylated protein, consisting of two subunits, an acidic (ranging between 35-40 kDa) and a basic subunit (ranging between 20-25 kDa). Very important fact is that the acid chain carries the immunoreactivity, according to literature. The survival of large fragments of Cor a 9 is necessary for its ability to sensitize individual. The aim of this study was to investigate Cor a 9, and to compare the digestive stability and allergenicity of large and small peptides released after pepsin digestion of whole raw and roasted hazelnut grains in standardized and physiologically relevant *in vitro* conditions, after heat treatment (roasting as the most abundant type of heat treatment). *In vitro* simulated phases of oral and gastric digestion were performed with ground raw and roasted hazelnut kernels according to the 1.0 INFOGEST protocol. After digestion proteins were extracted from the digestion mixture and analysed by 1D and 2D SDS-PAGE, while their IgE test was examined in the sera of allergic patients using ELISA and 2D immunoblot. The focus of the research was on the analysis of the 2DE map by Image 2D Master Platinum 7.0 software, comparing region of acid and basic Cor a 9 from raw and roasted hazelnut. Cor a 9 peptides are resistant to gastric digestion, and are able to bind IgE patients. Roasted hazelnuts are more prone to digestion in the stomach than the raw sample and cause a milder IgE response in patients. The gastric digestion phase of raw and roasted hazelnut grains resulted in partial extraction and digestion of Cor a 9 into digestion-resistant peptides with preserved IgE-binding epitopes. These results show significant resistance of Cor a 9 raw and roasted hazelnuts to digestion in the stomach, as they remained mostly intact after 2 hours of gastric (pepsin) phase and retained their allergenicity.

Keywords: in vitro gastric digestion, Cor a 9, food matrix, IgE binding

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