Influence of immune activity of Cor a 9 from raw and roasted hazelnuts after gastric digestion.

Ivana N. Prodić[1]*, Katarina T. Smiljanić[2], Karin Hoffmann Sommergruber[3] and Tanja Ćirković Veličković [2,4-6]

1University of Belgrade – Faculty of Chemistry, Innovation Center Ltd, Serbia, 2University of Belgrade – Faculty of Chemistry, CoE for Molecular Food Sciences & Department of Biochemistry, Serbia, 3Medical University of Vienna, Department of Pathophysiology and Allergy Research, Austria, 4Ghent University Global Campus, Incheon, South Korea

5Ghent University, Faculty of Bioscience Engineering, Belgium, 6Serbian Academy of Sciences and Arts, Belgrade, Serbia

Introduction

Cor a 9 is one of the most common hazelnut allergen, a non-glycosylated protein, consisting of two subunits (acidic and basic). 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.

Materials & Methods

In vitro simulated oral and gastric digestion of raw and roasted hazelnut according to INFOGEST protocol.

→ SDS-PAGE and 2D-PAGE

→ *2D blot and ELISA with patients sera*

Results

Roasted hazelnuts are more prone to digestion in the stomach than the raw, 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 phase and retained their allergenicity. In the ELISA assay, the results showed that IgE-binding, inhibited with Cor a 9 originated from raw hazelnut in control sample, showed smaller percent of IgE-inhibition compared to raw hazelnut digested sample. In case of roasted hazelnut, inhibition with Cor a 9 originated from roasted hazelnut in control sample showed a slightly higher percent of IgE-inhibition compared to digested sample.

Conclusions

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 phase and retained their allergenicity.

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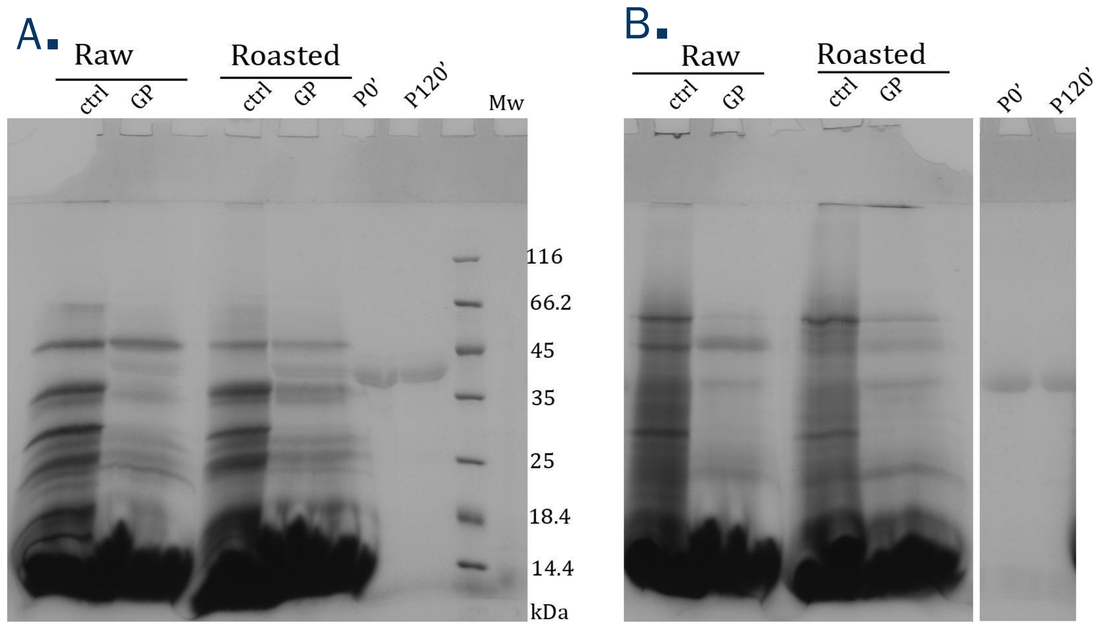
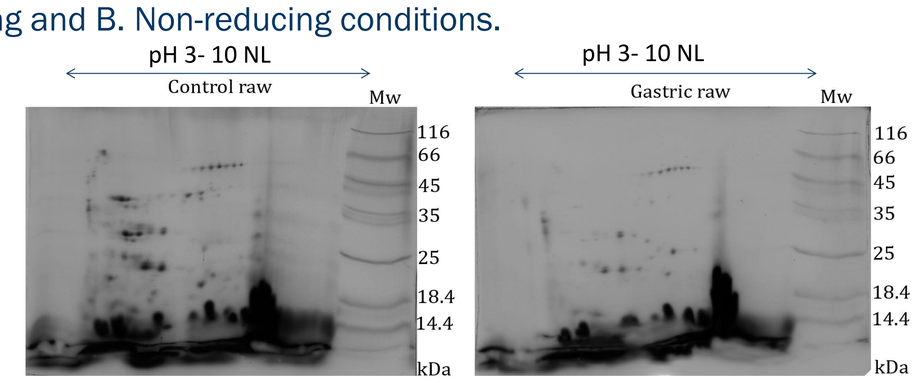


Figure 1.
Electrophoretic profile of control and digested of roasted and raw hazelnut on 14% PAA gel in A. Reducing and B. Non-reducing conditions.



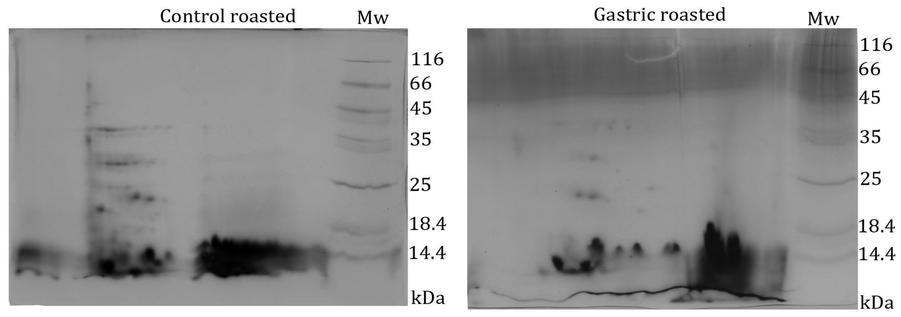


Figure 2.. Representative 2D gels of control and digested sample of raw and roasted hazelnut compared with Image Master 2D Platinum 7.0 .

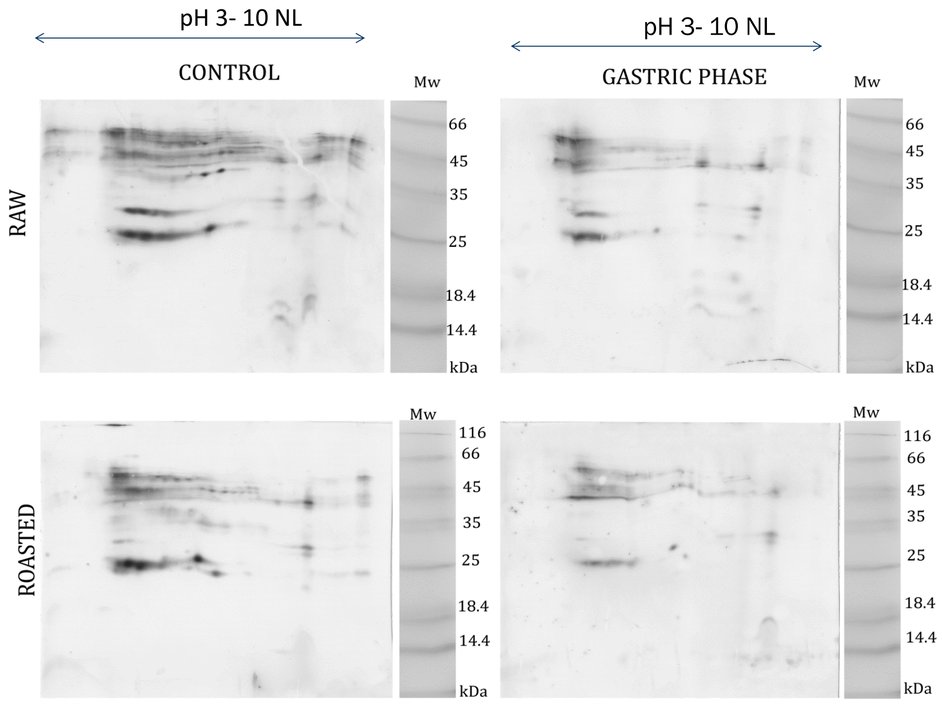


Figure 3. Representative 2D immunoblots of control and digested sample of raw and roasted hazelnut probed with the pool of patients sera.

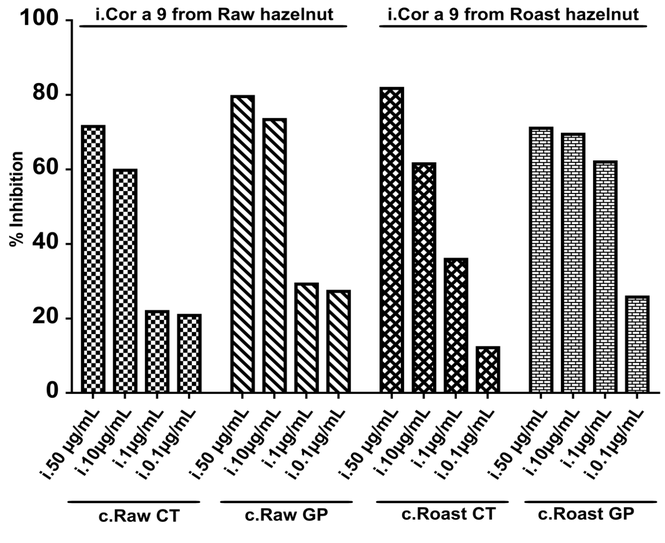


Figure 4. Inhibition ELISA of control and digested sample of raw and roasted hazelnut where inhibitor was Cor a 9 purified from raw and roasted hazelnut. Samples were probed with the pool of patients sera.