

STATE OF THE ART

Agri-food industry generates a significant amount of by-products commonly considered waste. Despite this they are still rich of significant nutritious components, for such reason they represent an economic loss and a socio-environmental problem, opening new perspectives for scientific research within a sustainable and circular economy framework. The "matrix effect" refers to the supramolecular organization of food components, which significantly influences the release of molecules. Despite numerous studies on the in vitro activities of these bioactive compounds, there is still limited information on their interactions and their impact on reaching the target.

AIM

The aim is to test different extraction methods to overcome the matrix effect to increase the extraction yield, the bioavailability and bioactivity of functional components. The extract will be tested on human colorectal adenocarcinoma cells (CaCo2) to analyse the cytotoxic and the anti-inflammatory activity.

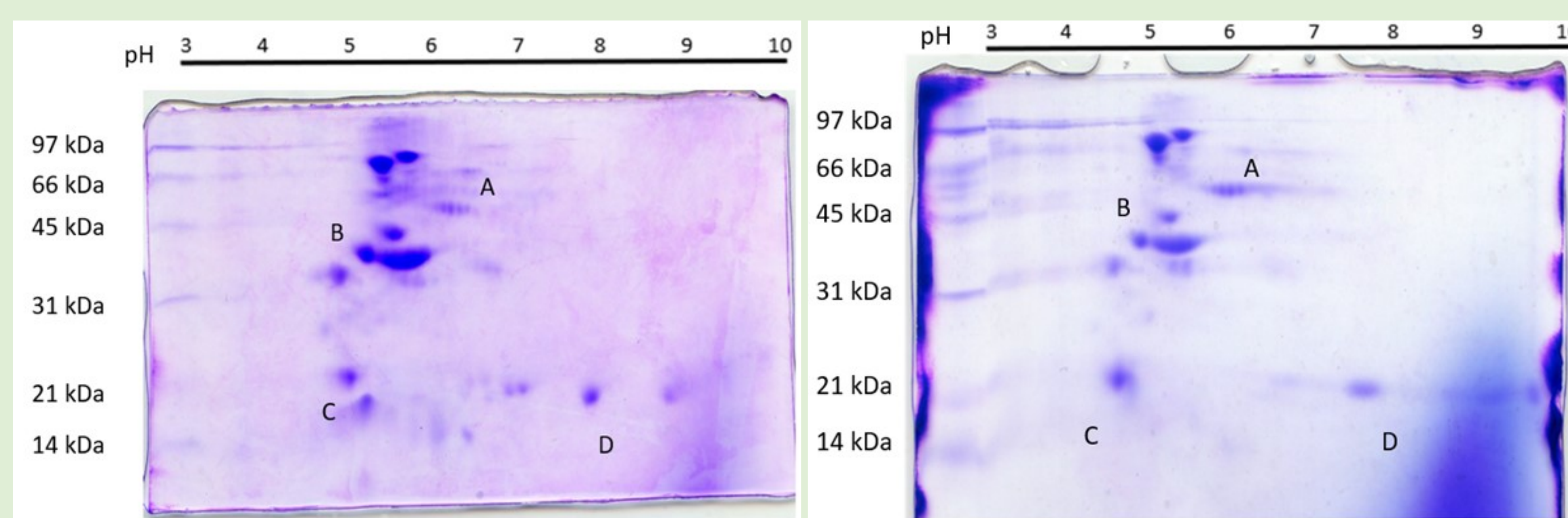
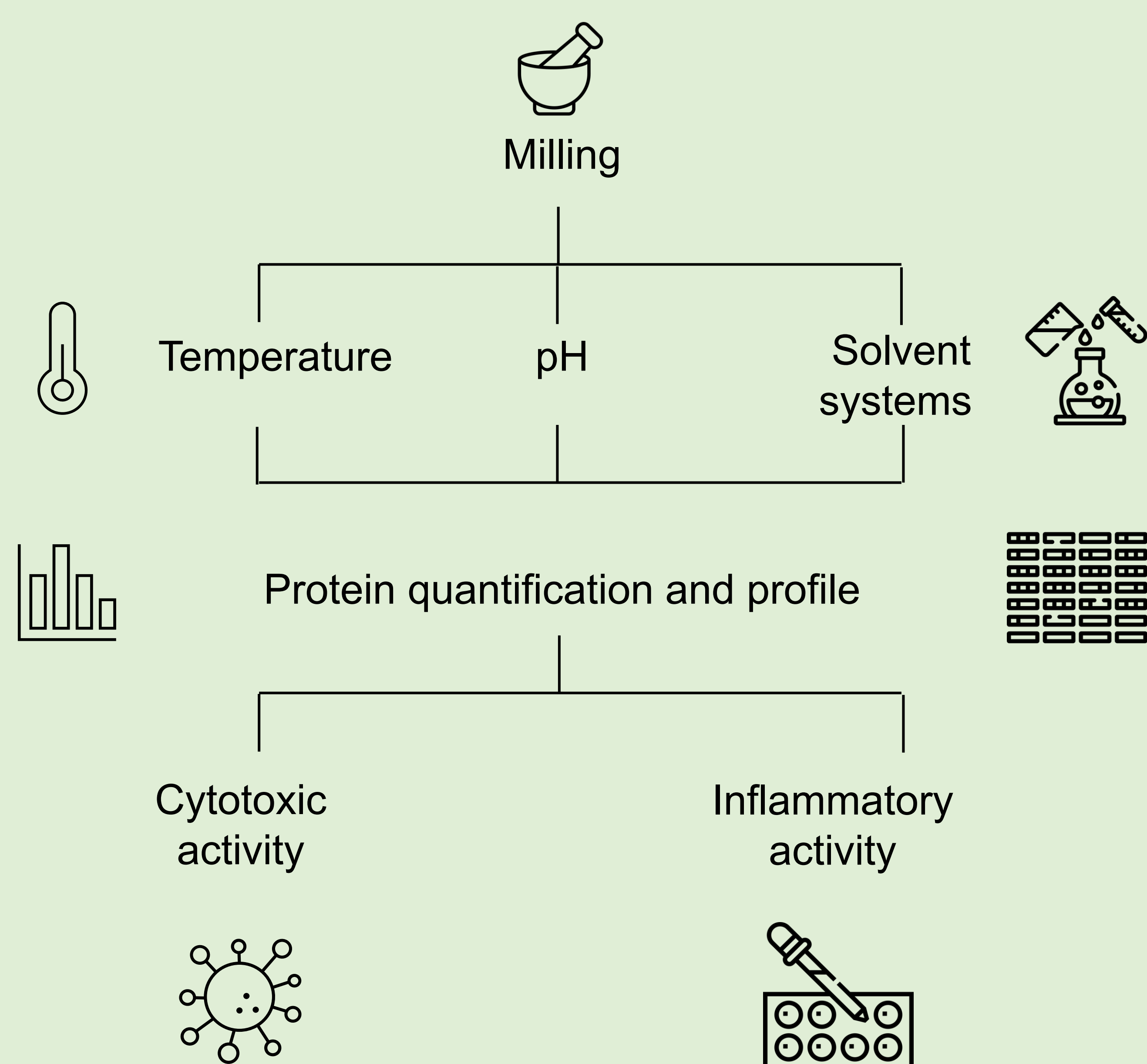
MATRIX



Okara from *Glycine max* (Soybean)

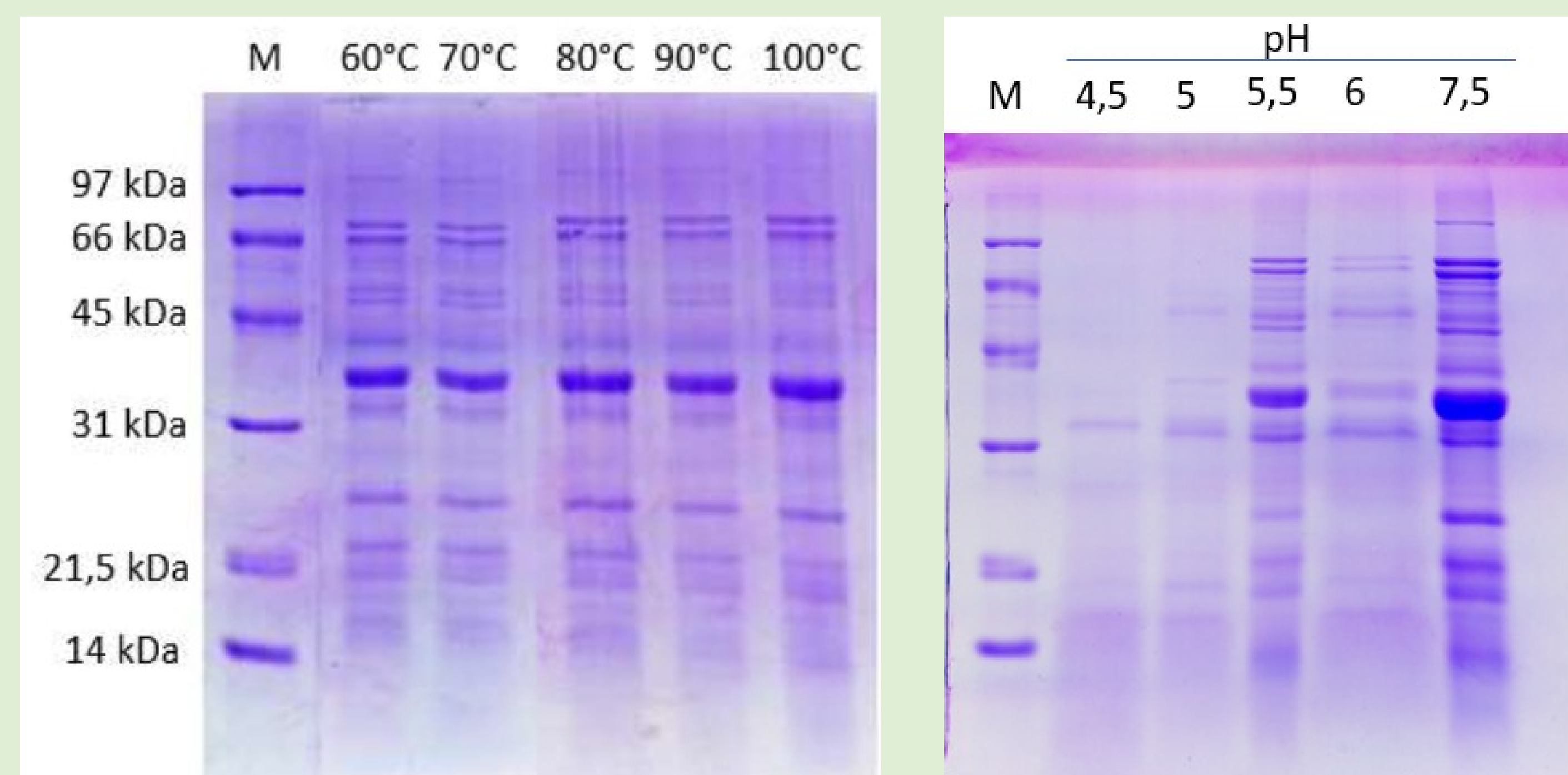
Okara: byproduct obtained during soymilk and tofu production. Proteins represent about 30% of its dry weight.

CHARACTERISATION AND BIOACTIVITY RESEARCH



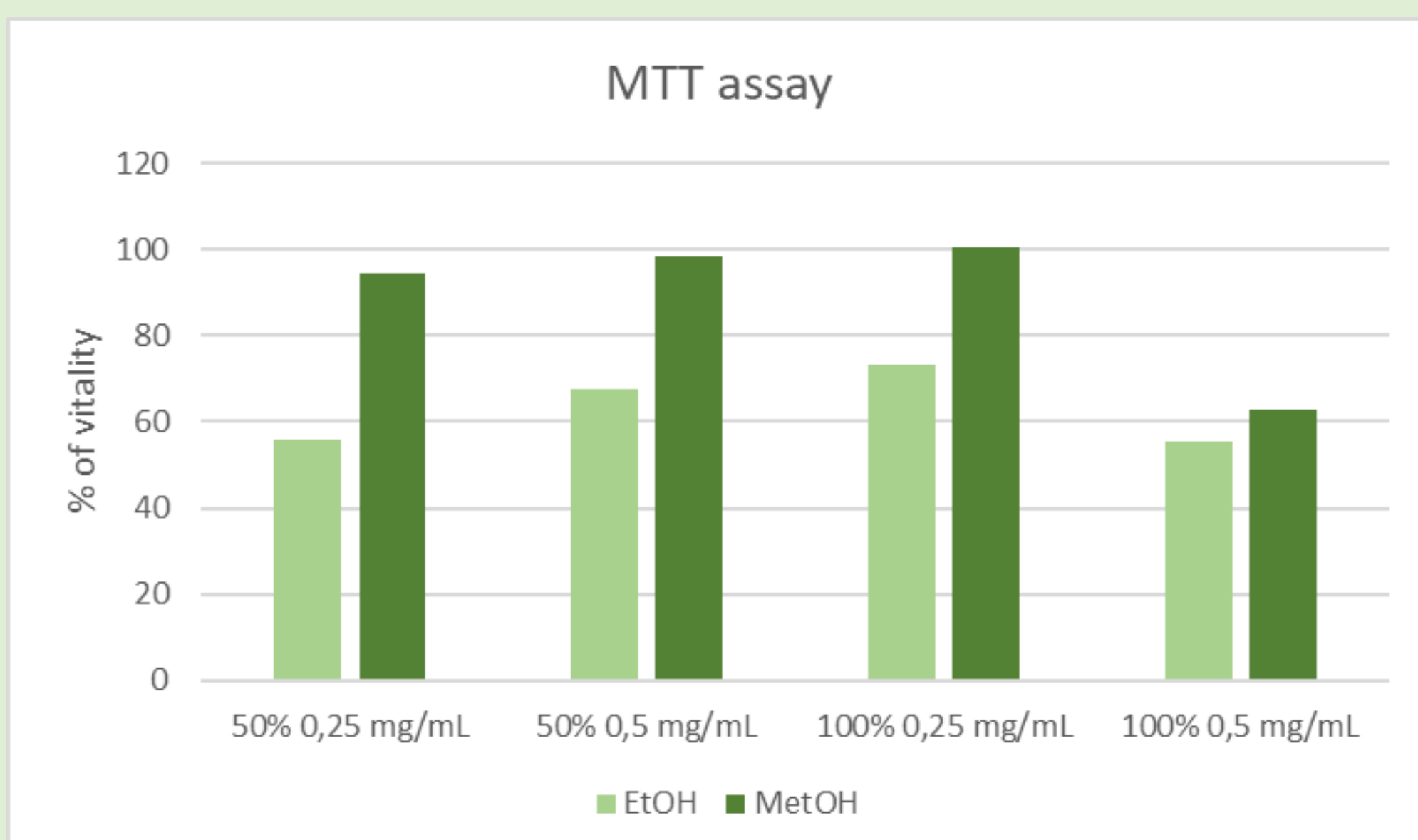
2DE gel of Soymilk

2DE gel of Okara

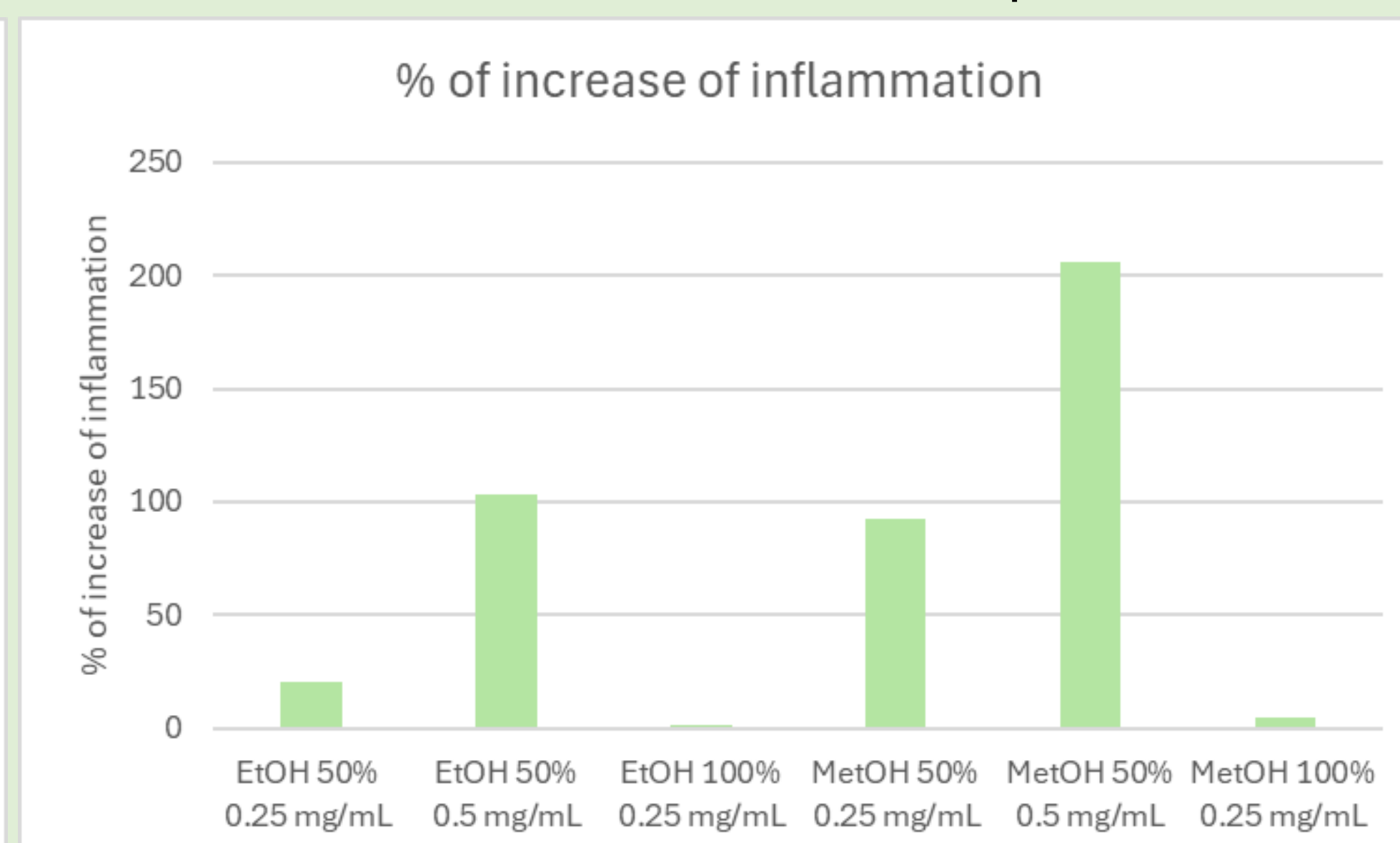


SDS-PAGE of okara treated with temperature

SDS-PAGE of okara treated with pH

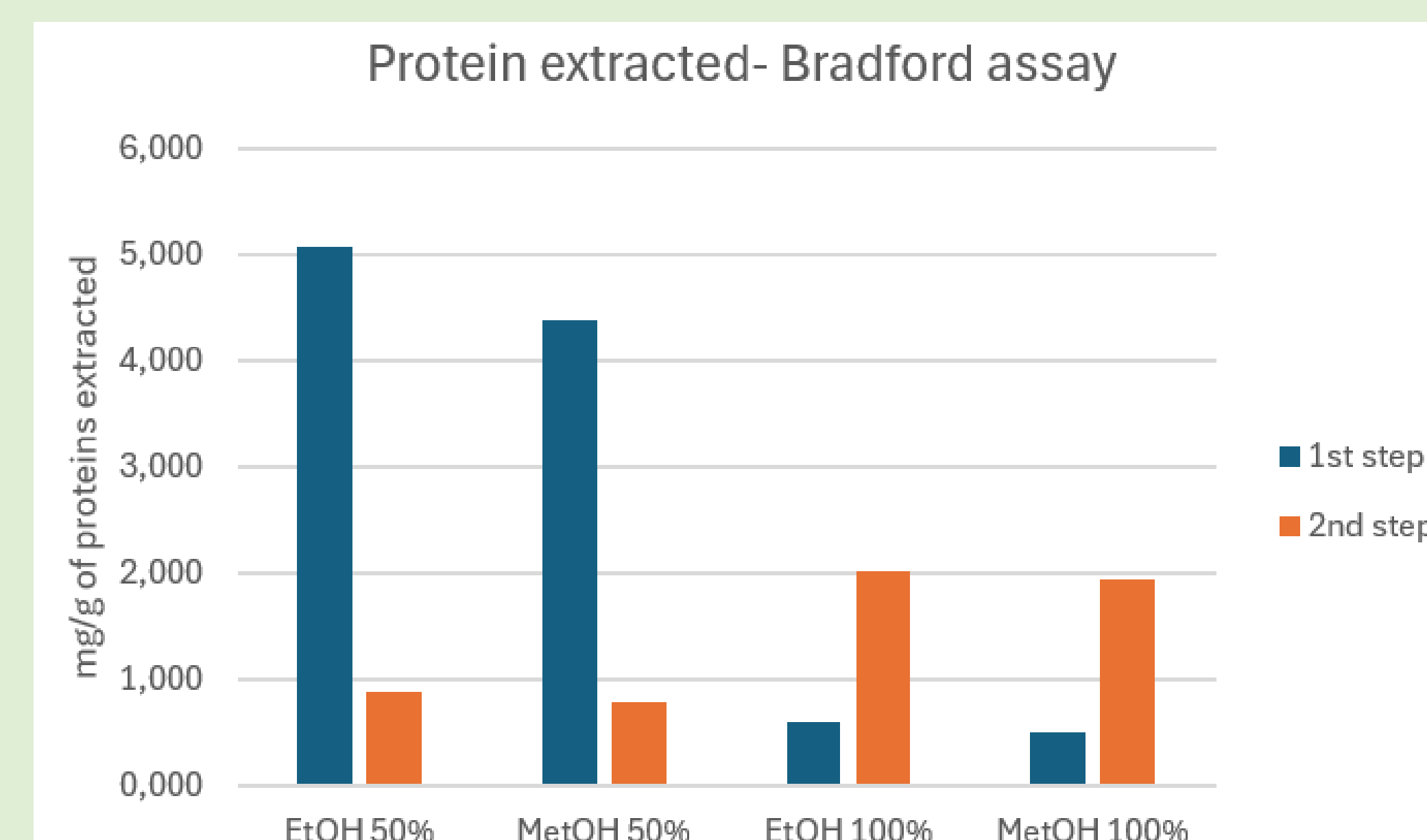


Cytotoxicity activity of extract obtained with different solvents tested on CaCo2 cells



Inflammatory activity of extract obtained with different solvents tested on CaCo2 cells

Quantification of proteins extracted with different solvents



CONCLUSIONS

The actual interest towards a sustainable food production and consumption is directed to the exploitation of byproducts currently considered a waste. In last decades, the effects of food on health and the effects of processing on food have been deeply investigated often evaluating the quality and quantity of components without considering the supramolecular organization. The "matrix effect" may deeply influence the release of molecules from food during digestion, absorption, and then utilization for physiological functions in the target tissue.

ACKNOWLEDGMENTS

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