



**Universitatea
Transilvania
din Braşov**

HABILITATION THESIS

SUMMARY

**Title: INNOVATIVE APPROACHES IN THE OPTIMIZATION OF
FERMENTATIVE TECHNOLOGIES AND IN THE EVALUATION OF FOOD
PRODUCTS QUALITY**

Domain: FOOD ENGINEERING

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Summary

The habilitation thesis is structured according to the approved methodology and includes two main sections, one section allocated to professional, scientific and academic achievements, and another one presenting the career evolution plans.

My professional achievements are outlined through the lens of my educational and career trajectory, spanning 34 years in higher education—from my initial role as a junior teaching assistant in 1992 to my current position as a full professor. I obtained my doctoral degree in 2000. My academic career has unfolded at Transilvania University of Braşov; I began in the Faculty of Mechanical Engineering, from which the Faculty of Food and Tourism subsequently branched off in 2007 in response to labor market demands. Over the years, I have held various administrative roles, ranging from Head of Chair/Department Director to Dean.

Regarding research activity, the list of publications comprises 27 ISI-indexed scientific articles and 76 other articles indexed in international databases, resulting in a Hirsch index of 5 in WoS/Clarivate and 9 in Google Scholar. As for project coordination, I served as project leader for two national-level research projects.

The research activity is presented alongside the key results obtained across two major research directions: (1) the optimization of fermentation and non-conventional technologies for producing food products with high bioactive value, and (2) the evaluation of the quality, safety, and functionality of processed food products using modern analytical and technological valorization methods.

Regarding the first research direction—the optimization of fermentation and non-conventional technologies for producing foods with high bioactive value—research focused on the effects of pasteurization and ultrasonic treatments on red wine grape must and the resulting red wines, as well as on their characteristics, including their biologically active compounds. Additionally, studies centered on the extraction of polyphenols and anthocyanins and the antioxidant capacity of vinegar variants produced from alcoholic substrates containing ultrasound-treated blueberry juice.

The second research direction—focused on evaluating the quality, safety, and functionality of food products through modern analysis and technological valorization methods—addressed the following topics: standardized versus alternative methods for the microbiological analysis of food products; the use of modern techniques to analyze the exposure of meat products to polycyclic aromatic hydrocarbons; and the application of various quantitative and qualitative analysis methods to fish products prepared using different cooking techniques.

The final part of the thesis outlines career development plans, specifically regarding future habilitation in the field of Food Product Engineering. Key research directions and projects aimed at securing funding will be aligned with the research areas of interest within the Food Product Engineering

doctoral program at the Doctoral School of the Transilvania University of Braşov—namely: food chemistry and processing; ensuring food safety and quality and developing control measures; linking food science to human health, diet, and the prevention of diet-related diseases; and developing resilient systems, reducing food waste, and valorizing by-products.