

BIOACCESSIBILITY AND STABILITY OF PHYTOCHEMICAL COMPOUNDS, ESSENTIAL FEATURES IN THE DESIGN OF FUNCTIONAL FOODS: A REVIEW

Tamara E. Mihociu¹, Danut G. Cimponeriu², Gabriel Mustatea^{1*}, Nastasia Belc¹

¹National Research and Development Institute for Food Bioresources - IBA Bucharest,
Ancuta Baneasa 5, 020323 Bucharest, Romania

²Faculty of Biology, University of Bucharest,
Splaiul Independentei 91-95, 050095 Bucharest, Romania

*email: gabi.mustatea@bioresurse.ro

Abstract

Epidemiological and observational studies and research on the impact of diet on health have contributed to increasing demand for foods that have high nutritional value or that are specific to certain target groups of consumers. The study aims to review information regarding the stability of phytochemical compounds in food matrices subjected to heat treatment.

Research on the relationship between the nutritional quality of the diet and the values of inflammatory biomarkers measured in chronic non-transmissible diseases has highlighted the protective role of phytochemical compounds that are naturally present in foods. The development of functional foods based on phytochemical compounds must be supported by understanding the mechanisms of action of phytochemicals, strategies to ensure the maximization of their bioaccessibility and bioavailability, and the establishment of the reference dietary intake. Most studies have focused on quantifying the phytochemical response to processing and identifying the main factors of phytochemical compound stability, for example: type of process, food matrix structure and environment, and storage conditions. The development of functional foods based on phytochemical compounds requires a detailed understanding of the stability of these compounds and the uptake of phytochemicals transported by the food matrix.

The strategies for maximizing the bioavailability of phytochemical compounds require *in vivo* evaluation of the mechanisms of action observed within *in vitro* studies and establishing reference dietary intake limits by identifying and assessing biological responses.

Key words: *Phytochemical compounds, Stability, Bioavailability, Functional foods.*