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TAL 797 – Seminário

Data: 05 de Novembro

Enzymatic Hydrolysis for the Production of Bioactive Peptides

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Level: (X) MS ( ) DS

Bioactive peptides are amino acid sequences derived from protein hydrolysis that can exert diverse biological activities. Their production, typically achieved through enzymatic hydrolysis, involves the cleavage of peptide bonds by specific enzymes, generating fragments with potential bioactive and functional properties. The choice of enzyme and process conditions directly influences the peptide profile and the resulting biological activity. A study conducted on mung beans and soybeans demonstrated that enzymatic hydrolysis significantly enhances the functionality and bioactivity of proteins. Mung bean was identified as a superior substrate due to its high degree of hydrolysis (DH) (up to 46.5% with bromelain), antioxidant capacity (78.4% DPPH scavenging activity), and elevated oligopeptide content (62.3%). The application of bromelain and ficin exhibited greater hydrolytic efficiency than papain and pepsin, producing medium-sized peptides (200–1000 Da) with improved solubility, emulsifying properties, and bioactivity—features that make them particularly suitable for use in functional foods and nutraceuticals. Evidence from studies on whey protein hydrolysates further indicates that enzymatic hydrolysis can be finely tuned to obtain hydrolysates with specific functionalities and antioxidant properties. These findings underscore the importance of systematically evaluating the effects of proteolysis on the structure and functionality of protein hydrolysates, as their performance depends on enzyme selection, degree of hydrolysis, and peptide size. Overall, enzymatic hydrolysis has emerged as an efficient and versatile strategy for exploring proteins from various sources, leading to the production of bioactive peptides with strong potential for application in functional foods capable of exerting multiple health-promoting effects. The results obtained open new perspectives for the development of functional ingredients through enzymatic hydrolysis, representing a sustainable and biologically driven approach that highlights a promising future for research in this field.

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