Creating Plant-Based Protein Ingredients and Products Adapted to the Specific Needs of Different Population Groups (Elderly, Children, People with Health Conditions)

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Abstract:

The growing global population, along with environmental and economic challenges, is driving the transition toward plant-based protein sources as a sustainable alternative to animal-derived proteins. Recent research highlights the need to develop plant protein ingredients tailored to the specific nutritional requirements of different population groups—older adults, children, and individuals with chronic diseases. This study explores scientific approaches to designing functional protein products with optimized digestibility, hypoallergenicity, and high nutritional density. Particular attention was given to the enzymatic modification of soy protein isolate using Bromelain concentrate and FICIN 50K, which improved the organoleptic and physicochemical properties of the product. The obtained samples were used to create functional beverages with different flavor profiles. Sensory evaluation results indicated a preference for samples containing 15–17% dry matter and fruit-based flavoring. The developed protein ingredients can be used to enrich the diet of older and physically active individuals and serve as a basis for further research on the development of specialized plant-based protein products with proven functionality and safety.

Keywords:

Plant-based protein, sustainable nutrition, enzymatic hydrolysis, soy protein isolate, functional beverage, sports nutrition, digestibility, protein modification.