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Novel and underutilized plant proteins for food security

Statement of the Problem: There is an accruing body to show an urgent need to shift toward a more plant-based diet for both environmental and health reasons. Now, the world population is rapidly growing and with it the demand for dietary protein, mainly of animal origin, is projected to increase by more than 50% by 2030 compared to 2000. The traditional western dietary pattern focuses predominantly on animal-based products to satisfy protein requirements. There are multiple reasons why plant proteins are still underutilized as human foods: their lower nutritional values (on a single source basis) due to their amino acids and non-nutritive compounds compared to animal proteins. The physical functionalities, such as poor solubility in water, may hinder their maximal utilization.

Methodology & Theoretical Orientation: To increase the food security novel, underutilized protein was produced to use in food and feed. We selected green technologies, such as pressurized hot water extraction (PHWE), enzymatic, traditional precipitation techniques. Chemical composition, functional properties and *in vitro* digestibility were tested before and after processing. Qualitative and quantitative consumer research (focus groups and surveys) and market analyses were also included.

Conclusion & Significance: The raw materials (*Vicia fava*, *Lupinus angustifolius*, *Brassica rapa/napus* subsp. *Oleifera*, *Linum usitatissimum*, *Cannabis sativa*, *Fagopyrum esculentum*, *Chenopodium quinoa*) were good sources of protein, fiber and phenolic compounds. PHWE, enzymatic treatments were suitable for recovery of good quality protein fractions. Fermentation was suitable to increase the shelf life and nutritional quality of pseudo-cereals. Processing techniques can enhance the digestibility of plant protein. Consumers in studied countries (FI, SE, DE and UK) are open to increase use of plant-based food, and the market for meat and dairy alternatives is growing across Europe.

Biography

Anne Pihlanto has completed her PhD in Food Chemistry at University of Turku (Finland) and Postdoctoral studies from University of Lyon. She has worked as a Scientist of Natural Resources Institute in Finland. She has published more than 100 papers in reputed journals and invited chapters in Books.

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