NOVEL APPROACHES FOR EXTRACTION OF PROTEINS FROM ALTERNATIVE SOURCES

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INTRODUCTION:

Alternative proteins from unconventional sources has shown significant increase in demand due to various factors namely negative perception associated with meat based proteins. Association of Green House Gases (GHGs) emission associated with Animal-based foods compared to plant-based foods (e.g. 1 kg of animal products requires about 2 to 15 kg of plant material). Moreover, global protein production faces unachievable demands due to population growth along with other socio-economic challenges unless alternative strategies are adopted.

OBJECTIVES:

The objective of this presentation is to outline various approaches employed for the extraction of proteins from a range of unconventional sources.

RESULTS:

There are many strategies available to respond to growing global protein demand, which span alternative sources of protein, reduction in protein losses and technological advancements. Novel unconventional sources of protein and improved protein recovery from food processing streams while employing novel biotransformation techniques will facilitate a bridging of the gap between protein supply and demand. Novel sources of protein require the development of new value chains, and attention to issues such as production costs, food safety, scalability and consumer acceptance. Innovative, green, sustainable bioprocessing technologies for recovery of proteins are gaining increased processors interest over conventional techniques. The obvious advantages of novel technologies include improved process efficiency, the use of clean solvents and allow the production of chemical residue free end product. A wide range of new conversion technologies have been employed to extract proteins from a range of matrices. New conversion technologies can be employed at various stages including pre-treatment, extraction or purification of proteins (Fig 1.). The key focus of the pre-treatment is to disrupt plant matrices and increase protein solublisation. New pretreatment methods are generally employed prior to extraction, and their combinations with conventional and green extraction technologies.

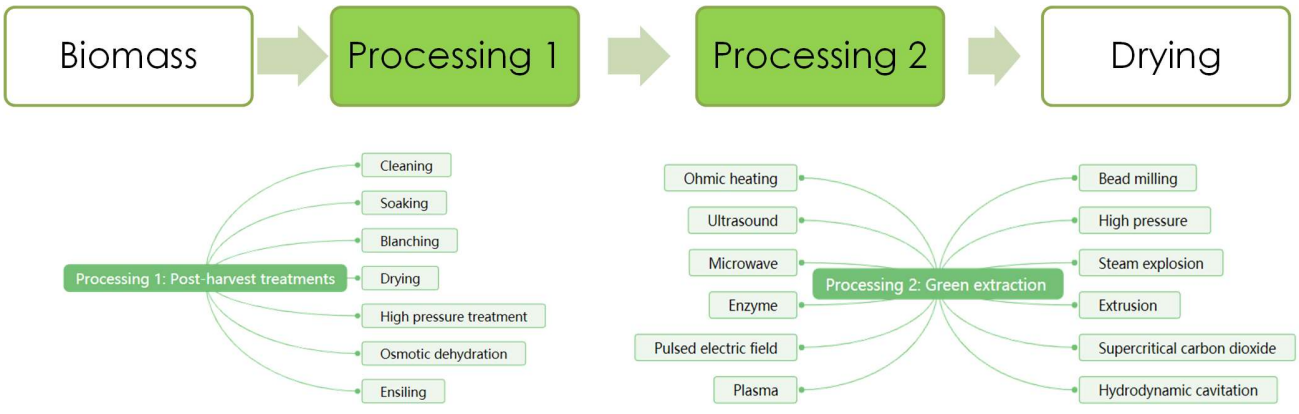

Fig 1. Novel approaches for extraction of proteins

CONCLUSIONS:

Combinations of different technologies and extraction methods can enhance the extractability of proteins with higher purity and contribute towards improved process efficiency. It is expected that these new conversion technologies will contribute to develop a zero-waste sustainable approach. Although some of these technologies have been investigated extensively for the recovery of protein, the majority of them require further development prior to commercial adoption.

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