

Utilization of Agricultural Products: Sources of Dietary Fibre and Their Health Benefits

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1. Introduction

Development of functional dietary fibre from agricultural products has been the focus of Cui's lab for the last 20 years. With the objectives of developing/creating and evaluation of new dietary fibre products that will impart superior physical and/or physiological benefits compared to native dietary fibre when incorporated into processed food, we have studied a variety of Canadian agricultural products, including flaxseed, yellow mustard seeds, fenugreek seeds, wheat brans, barley and oats beta-glucans, pulses and psyllium husk. A network has been developed in Canada and with international research institutes/industrial partners for the purpose of developing dietary fibre based novel food ingredients using novel processing technologies, molecular and functional characterizations, formulations; this will offer competitive advantages for the Canadian processed food industry in an international marketplace. The market for dietary fibre is very competitive. It is expected to triple in the next

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decade due to a growing demand for healthier processed foods containing more fibre without compromising taste or other sensory qualities. An ever growing need is to create healthy processed foods that can play a role in preventing and managing certain chronic diseases, such as obesity, diabetics, high blood pressure, cardio vascular disease, cancers. These have become prevalent in our society in recent decades. Figure 1 illustrates the strategy used by Cui and colleagues around the world for studying polysaccharides/dietary fibres from agricultural products. Polysaccharides from agricultural products are multi-functional: it can be used as hydrocolloids based on their ability to give viscosity to aqueous solutions, form gels and exert stability for oil/water emulsions [1]. These same polysaccharides are considered as water-soluble dietary fibres as they cannot be digested by human digestive enzymes and can be fermented in the gut to promote gut health and enhance the immunity (Nie, Cui and Xie, 2018). Some of the polysaccharides from plants and fungus were found to be bioactive in terms of modulating immune systems, exhibiting anti-cancer effects and prevent oxidative stresses [2]. This paper will focus on the development of dietary fibres from crops grown in Canada, and explore their potentials as functional ingredients for the food industry.

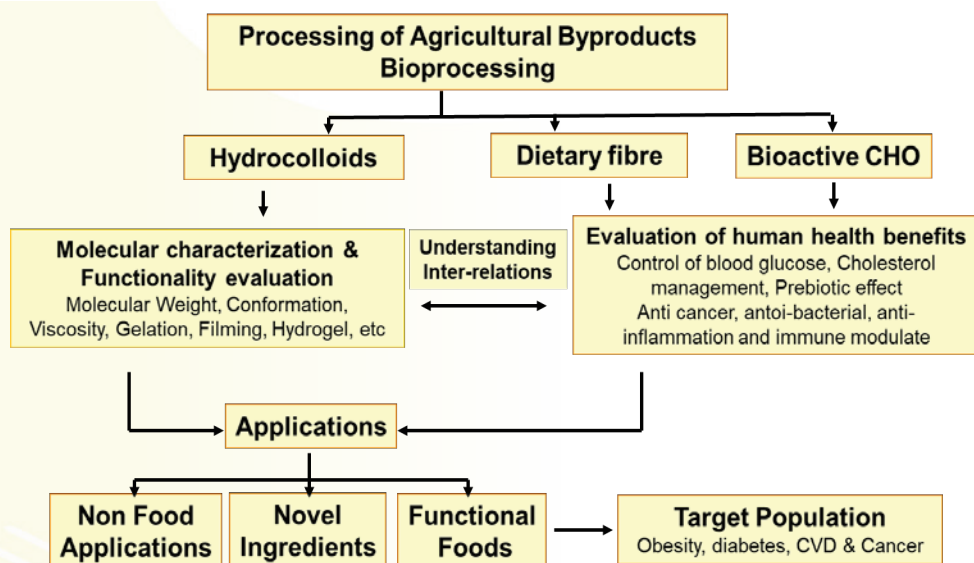


Figure 1. Development of Functional Ingredients from Agricultural Products.