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Functional Oligosaccharide: Chemicals structure, manufacturing, health benefits, applications and regulations.

Functional Oligosaccharides are carbohydrates that have two to ten monosaccharides units linked together with glycosidic bonds. They are one of fibers structure that are present at high concentration in Jerusalem artichokes which commercial inulin is extracted, and at low concentrations in other edible plants such as in onions, garlic, legumes, wheat, asparagus and other plants. Functional oligosaccharides have mildly sweet taste and other characteristics, such as mouth feeling. This mouth feeling characteristic interest food industry to incorporate oligosaccharides in functional and regular foods as a partial substitute for fat and sugars and to improve texture. Majority of functional oligosaccharides are non-digestible in small intestine digestive enzymes and reached the clone where it act as a growth factor (prebiotics) to enhance

the growth of beneficial bacteria (probiotics) and inhibit pathogenic bacteria in the colon via competitive exclusion. These benefits to colon health and other health benefits plus other unique characteristics have increased the global market of functional oligosaccharides applications in foods, pharmaceuticals and for other industrial applications. Due to increasing demands of functional oligosaccharides for their health benefits and characteristics, functional oligosaccharides are currently produced enzymatically at higher yield and lower cost from different natural sources of carbohydrates as a replacement of costly plants extraction methods. One of these enzymatically produced functional oligosaccharides are cyclodextrins and derivatives that have an important pharmaceutical application in drugs delivery systems.

Biography

Osama O Ibrahim is a highly-experienced Principal Research Scientist with particular expertise in the field of microbiology, molecular biology, food safety and bioprocessing for both pharmaceutical and food ingredients. He is knowledgeable in microbial screening, culture improvement; molecular biology and fermentation research for antibiotics, enzymes, therapeutic proteins, organic acids and food flavors; biochemistry for metabolic pathways and enzymes kinetics, enzymes immobilization, bioconversion and analytical biochemistry. He was an External Research Liaison for Kraft Foods with Universities for research projects related to molecular biology and microbial screening and holds three bioprocessing patents and multiple publications. Upon his retirement from Kraft Foods he established his own biotechnology company providing technical and marketing consultation for new startup biotechnology and food companies. He has received his BS in Biochemistry with honor and two MS degrees in Microbial Physiology/Fermentation and in Applied Microbiology. He has received his PhD in Basic Medical Science (Microbiology, Immunology and Molecular biology) from New York Medical College. He is a Member of American Chemical Society, American Society of Microbiology and Society of Industrial Microbiology since 1979.

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