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PREPARATION OF MODIFIED MICROBIAL POLYSACCHARIDES AND THEIR USE FOR MICROENCAPSULATION*

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Microbial polysaccharides are being dissolved e. g. Bacterial Cellulose; or modified first e. g. Carboxymethyl Cellulose (CMC) and Carboxymethyl Pullulan to obtain a stable microgel. Later on, this microgel can be used to encapsulate oil droplets, vitamins or probiotics to be integrated into food products.

Microbial polysaccharides are biopolymers/natural polymers, derived from living organisms during their growth in the form of polysaccharides. Being biodegradable and renewable, they are studied for different properties from several microbial sources for their various applications. Compared to number of biopolymers present in nature, the number of those produced commercially is actually limited. From which, 2 different polymers were chosen for modification and microencapsulation.

Bacterial Cellulose; which is composed of glucose monomers connected by β (1–4) glycosidic linkages, and its chemical formula is $(C_6H_{10}O_5)_n$, was produced using a symbiotic culture of *Komagataeibacter xylinus*. Due to its unique properties, BC has been employed as a new biological material in the food industry, as edible packing medical, as wound-dressing materials, artificial skin, vascular grafts, scaffolds for tissue engineering, artificial blood vessels, medical pads, dental implants, and industrial products; as sponges to collect leaking oil or absorbing toxins, and Optoelectronic materials [1, 2].

Pullulan; is a linear, unbranched polymer of maltotriose linked with α (1–6) glycosidic linkage. It is produced by *Aureobasidium pullulans* (dimorphic fungi) and some other species such as *Cryphonectria parasitica*. The unique glycosidic linkage pattern endows pullulan with distinctive physical traits, including adhesive properties, the capacity to form fibers, compression moldings, and the formation of oxygen-

impermeable films. Pullulan has numerous applications in pharmaceuticals, foods, environmental pollutant disposal and agriculture [3, 4].

Carboxymethylation of both polymers was done using NaOH 30 % and monochloro-acetate. Since cellulose is insoluble in water unlike pullulan, synthesis of microgel was carried out differently. Ugi reaction then was applied for cross-linking of the obtained microgel.

Microencapsulation; which is the science of trapping components into a secondary material (encapsulant), producing small solid particles (1–500 µm in size) [5]. It was practiced using an emulsion of toluene in water, with toluene being the core material for the microcapsule. The mixture is then dried, producing microcapsules of different diameters and forms depending on the preparation method and materials used.

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TECHNOLOGICAL ASSESMENT OF ENZYMATIC TREATMENT OF HIGH PROTEIN PRODUCTS*

Keywords: Soy, Quinoa, Protein, Enzymatic hydrolysis, ultrasonic pretreatment.

Consumers are increasingly becoming keen on healthy foods, which led researchers to design innovative products enriched with biologically active substances