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Chitosan potential aspects for drug delivery and pharmaceutical applications using microencapsulation techniques

Hassani Abdelkader*, Siti Aslina Hussain, Norhafizah Abdullah, Suryani Kmaruddin, Rozita Rosli

Department of Chemical and Environmental Engineering, Faculty of Engineering, Universiti Putra Malaysia

*****Corresponding author's e-mail: Hassani.abk@gmail.com

ABSTRACT. Over the years, science has improved healthcare diagnosis and treatment of patients. Biochemical engineers have enhanced considerably our understanding of the physiological obstacles to maintain efficient drug delivery systems. Drug delivery is the process of administration of bioactive compounds to reach therapeutic targets. Microencapsulation can be defined as the technique of enveloping of the continuous phase of polymeric compound loaded liquid or solid tiny particle. Microencapsulation techniques are widely used to load active agents using biodegradable polymer like chitosan. This natural polysaccharide has many therapeutic uses, such as oral and parenteral delivery of drugs as well as multifaceted applications in cancer therapy. Chitosan is essential for a wide range of chemotherapy drugs delivery. Due to its biocompatible, mucoadhesive properties and absorption enhancing, chitosan has been used widely to microencapsulate therapeutic molecules as a coating agent to maintain the gastric mucosa without allergic or irritant reactions. The present review highlights the recent application of microencapsulation techniques using chitosan as coating polymer. Hence, the ionic cross-linking technique is the most common technique used by researchers despite its mild condition that increases the efficiency of therapeutics loading and reduces side effects.