



Influence of Whey Protein on Stability of α -Mangostin Entrapped in Alginate/Whey Protein Beads

Tunyaporn Sirilert¹, Nattapol Kajonboon¹ and Nattiga Silalai^{1,*}

¹Faculty of Science, Department of Food Technology,
Siam University, Bangkok 10160, Thailand

Received 11 October 2017; Received in revised form 6 March 2018

Accepted 3 May 2018; Available online 30 June 2018

ABSTRACT

Although encapsulation efficiency of various biopolymers has been documented, no attempts have been made to investigate stability of α -mangostin entrapped and an encapsulation efficiency of biopolymer beads in different conditions. In this study, the efficiency of whey protein (W) and Alginate (A) to encapsulate α -mangostin was assessed through the investigation of the α -mangostin content stored at different conditions. Particle size and stiffness of biopolymer beads were measured. An increase in whey protein content enhanced gel viscosity, which resulted in particles with significantly higher dimension size and weight ($p < 0.05$). A decrease in encapsulation efficiency was found at higher temperatures and lower pH values. However, higher encapsulation efficiency was observed in gel beads which contained whey protein (50A : 50W and 60A : 40W) at all conditions. An increased protein content resulted in a higher gel network density and retention of the α -mangostin in the beads. The released α -mangostin content decreased with increasing protein content at all conditions during storage. The results confirmed that the α -mangostin stability was significantly governed by both conditions and the use of whey protein to protect the target compound.

Keywords: Whey protein; Alginate; α -mangostin; Encapsulation; Biopolymer; Bead

1. Introduction

Bioactive plant phenolic compounds such as xanthenes are mostly found in mangosteen pericarp. Mangosteen (*Garcinia*

mangostana L.) or “Mang Khut” is a tropical fruit in Southeast Asia [1]. Xanthenes are a class of phenolic compounds, which are one of the most

*Corresponding author: nattiga.silalai@gmail.com