ABSTRACT

People all around the world are shifting towards eating more plant-based food, the vegan consumers and communities are rapidly increasing. However, there is a challenge in the development of plant-based meat analogue to mimic the characteristics of animal based products, especially for the juiciness and textural properties. Hydrocolloids can be used to improve the quality attributes of plant-based meat products. Therefore, this study aimed to investigate the effect of adding methylcellulose, k-carrageenan, and xanthan gum on the physical properties of plant-based nugget. Plant-based nuggets were added with methylcellulose, k-carrageenan, and xanthan gum each at 0%, 1%, and 2% concentration. The cooking loss, moisture loss, water holding capacity (WHC), hardness, and springiness were evaluated. Results showed that methylcellulose and k-carrageenan at 2% significantly improved the cooking loss and moisture loss, while xanthan gum showed a less significant effect. K-carrageenan significantly increased the WHC of raw and cooked plant-based nugget but methylcellulose and xanthan gum had no significant effect. For the textural properties, methylcellulose and k-carrageenan increased the hardness and springiness, and the inclusion at 1% showed no significant difference with the hardness of commercial chicken nugget. K-carrageenan at 2% was able to mimic the springiness of commercial sample. Higher concentration of xanthan gum resulted in lower hardness and springiness. This study suggested that methylcellulose and k-carrageenan were capable of improving the physical properties and fixing the shortcomings of the textural properties due to their gelling properties and water binding ability.

Keywords: *plant-based nugget, hydrocolloid, methylcellulose, k-carrageenan, xanthan gum, physical properties*