Rheological Studies of Texture-Modified Chicken Rendang with Tapioca and Sago Starches as Food Thickener for Patients with Dysphagia

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Abstract

Dysphagia refers to the term of having difficulty in swallowing or moving foods and liquids from the mouth to the stomach, which will lead to dehydration and malnutrition. Texture modified food is one of common method used in dysphagia management, by altering the rate of food travelling down the pharynx. In this study, texture modified chicken rendang was developed to comply to Texture C (fine puree with lump free) as outline by Australian dysphagia standard. Rendang, one of popular traditional dish in Malaysia was selected; aim to introduce high protein diet in patient with dysphagia problem. Texture modification was carried out by adding commercial thickener, and later was compared to formulation with addition of tapioca and sago starch as the thickener. Effect of using different types of food thickener, together with different level of starch addition and serving temperature on the rheological properties of developed food were investigated. Results showed that control sample (chicken rendang without any starch addition) exhibit shear thinning effect at temperature above 55°C, while all thickened samples demonstrated a shear thinning effect throughout the temperature studied. Both storage modulus (G') and loss modulus (G'') values of samples containing starch decreases as temperature increases. Addition of starch was found to increase shear thinning effect as starch granules would normally lose its integrity upon heating. The optimum starch concentration for all thickened samples was found around 6%. Addition of commercial thickener was found to exhibit the most stable structure, followed by tapioca and sago starch, upon oscillation frequency and temperature increment during rheological analysis. In conclusion, it was shown that tapioca starch could potentially use as cheaper thickener alternative in preparing texture modified chicken rendang. Preparing food in accordance to a specified dysphagia diet standard will ensure safe consumption; hence will increase nutrient intake among patients with dysphagia.

Keywords: Texture-Modified, Tapioca, Food Thickener, Dysphagia