TEXTURE PROFILE OF CHICKEN BREAST FILLET UNDERGOING SOUS-VIDE PROCESS

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Abstract –Chicken breast is rich in protein and easy to be digested, hence it is applied to be material for children and elderly food creation, mostly being thermal cooking. Vacuum packing of the materials in pouches before cooking under controlled temperature and time and then cooled at low temperature of 2-4ºC for a short period is defined as sous-vide process. This technique has benefits compared to traditional cooking methods because materials retain high nutrients and present softening to materials. This research focused on analyzing texture profile of chicken breast fillet during sous-vide cooking at temperature of 60ºC for 0-8 h. Result was found that cooking time affected texture profile of chicken breast fillet. Longer cooking time resulted in decreasing hardness and chewiness of chicken breast fillet. Then water released from sample and increase hardness and chewiness.

Key Words –Chicken breast, Sous-vide process, Fillet, Texture profile

Sous-vide process is not just improved the texture of meat, but remain higher nutrients compared with traditional cooking methods.

I. INTRODUCTION

In year 2016, over 14% of the Thai population, or more than 10 million people, were 60 years old or older [1]. Attempts to create food menus to support elderly is important due to physical changes of aging such as chewing and swallowing, digestive tract, hormones, sensory organs and body composition that affect nutrition [2]. Chicken breast, low fat meat material, is widely used to be cooked for children and elderly. However, for producing processed chicken breast, it is necessary to study effect of cooking chicken breast on texture profile for further use to produce chicken breast menu for elderly in mass product. Sous-vide is a cooking of materials packed in vacuum pouches before heating under controlled condition and this technique could retain more nutrients and softening to materials [3]. This research aimed to measure texture profile of chicken breast during sous-vide process. Results could be used to further determination an acceptance in the texture level of chicken breast by elderly panelists.

II. MATERIAL AND METHODS

Sample preparation: Chicken breast fillets were purchased from supermarket. Sample weight was controlled to 200-250 g/breast. Blood and water outside the samples were dried using tissue paper. Then samples were sealed in plastic bag and stored at 4°C until sous-vide cooking. *Sous-vide process:* Samples were vacuum packed into LLDPE bag with size of 15×23 cm. Cooking of chicken breast was followed by Lopez-Alt [4] to pasteurize chicken breast of 136ºF (58ºC) for 68.4 min. This research was then sous-vide cooked using water bath at temperature 60°C for 1, 2, 3, 4, 5, 6, 7or 8 h. After that samples were cooled at 4°C for 30 min prior to texture profile determination. *Texture profile analysis:* Samples were prepared and compression test was performed. The following parameters were quantified: hardness (N) maximum force required to compress the sample, springiness (m), ability of the sample to recover its original from after deforming force was removed, and chewiness, elastic resistance from the food [5,6]. Experiments were done in 2 replicates.

III. RESULTS AND DISCUSSION

*Texture profile analysis***:** Cooking time affected texture profile of chicken breast fillet (Fig. 1). During cooking time of 1-5 h, longer cooking time resulted in decreasing hardness and chewiness of chicken breast fillet (Fig. 1). Result was supported by [7] who explained that hydrodynamic shear forces and high temperatures lead to food structure changes, which lead to decrease meat hardness [8,9]. After cooking for 5 h, water released from chicken breast fillet and increased hardness to sample.
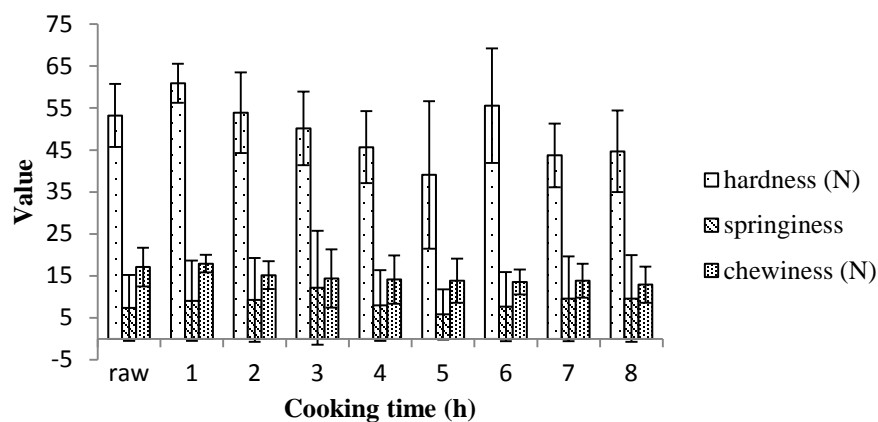
Figure 1.Texture profile of breast chickenafter sous-vide cooking at60°C for 1-8 h.

IV.   CONCLUSION

Cooking time affected texture profile of chicken breast fillet. Longer cooking time resulted in decreasing hardness and chewiness of chicken breast fillet. Then water released from sample and increase hardness and chewiness.

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