

Combination effect of papaya extract and sous-vide cooking on texture modified chicken meat for elderly care food

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Objectives: Sufficient nutrient intakes are important for the elderly. Meats and products are great sources of protein while the cooking process may leave them dry and hard to chew. Suitably modified food texture and protein intakes are necessary which are recommended for elderly care to reduce those related diseases for safe quality food. Papaya extract (PaExt) and sous-vide (SV) are both evidenced able to increase meat tenderness along with quality modification. This study was to investigate the effects of PaExt, SV treatments, and their interaction on physicochemical and microstructural properties of chicken breast.

Materials and Methods: Skinless fresh chicken breast was purchased from local meat supplier, weighed then injected with 0.05% (w/w) PaExt solution. Samples were tumbling for 30 min then vacuumed sealed for water bath (WB, 80°C, 30 min) or sous-vide (SV, 61°C, 100 min) cooking.

Results and Discussion: SV treatments leads to a significantly lower cooking loss, higher moisture, and a* value ($p < 0.05$). The combination of PaExt and SV resulted in a significantly ($p < 0.05$) decrease on hardness from $1.18 \times 10^5 \text{ N} / \text{m}^2$ to $2.68 \times 10^4 \text{ N} / \text{m}^2$. Moreover, ruptured muscle structure and hydrolyzed components were clearly observed under the microscope.

Conclusions: Application of 0.05% PaExt and 61°C SV for 100 min on the chicken breast could improve texture and achieve the criteria 'able to smash with gum' of UDF (Japan Care Food Conference, 2018). This significantly reduce hardness compared to control with an extremely potential in a dysphagia diet apply

Key words: Elderly care food, Hardness, Papaya extract, Sous-vide, Tenderization