

Dafa Dinar IffatulMaulal Karimah. NPM 220331100014. Pembuatan Daging Analog dari Ampas Tahu Melalui Aplikasi Enzim *Transglutaminase* dan *Freeze Structuring*. Di bawah Bimbingan **Cahyo Indarto, S.TP., MP, Ph.D.** dan **Mojiono, S.TP., M.Si.**

ABSTRAK

Daging analog merupakan produk pangan berbasis nabati yang dikembangkan untuk menyerupai karakteristik daging hewani salah satunya menggunakan ampas tahu. Ampas tahu memiliki potensi sebagai bahan baku daging analog karena masih mengandung protein dan serat yang cukup tinggi. Penelitian ini bertujuan untuk mengetahui pengaruh konsentrasi enzim *transglutaminase* dan suhu pembekuan menggunakan metode *freeze structuring* terhadap karakteristik daging analog berbasis ampas tahu. Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) faktorial dengan dua faktor, yaitu konsentrasi enzim *transglutaminase* (1%, 2%, dan 3%) serta suhu pembekuan (-15°C dan -18°C) dengan tiga kali pengulangan. Parameter yang diamati meliputi tekstur (*springiness*, *hardness*, dan *chewiness*), *water holding capacity* (WHC), warna (L^* , a^* , b^*), kadar protein, dan uji hedonik. Hasil penelitian menunjukkan bahwa interaksi konsentrasi enzim *transglutaminase* dan suhu pembekuan berpengaruh nyata ($p < 0,05$) terhadap nilai *springiness* dan *chewiness*. Nilai *springiness* tertinggi diperoleh pada perlakuan enzim 2% dan suhu -15°C sebesar 0,82, sedangkan nilai *chewiness* tertinggi diperoleh pada perlakuan enzim 1% dan suhu -18°C sebesar 344,22. Penambahan enzim *transglutaminase* berpengaruh nyata terhadap nilai *hardness*, dengan nilai tertinggi sebesar 771,89 pada konsentrasi enzim 1%. Variasi suhu pembekuan berpengaruh nyata terhadap nilai *hardness*, WHC, dan *lightness*. Nilai WHC tertinggi diperoleh pada perlakuan enzim 3% dan suhu -18°C sebesar 62,44%, sedangkan kadar protein tertinggi sebesar 23,10% juga diperoleh pada perlakuan yang sama. Hasil uji hedonik menunjukkan bahwa seluruh perlakuan tidak memberikan pengaruh nyata terhadap tingkat penerimaan panelis. Berdasarkan metode indeks efektivitas De Garmo, perlakuan terbaik diperoleh pada kombinasi enzim *transglutaminase* 1% dan suhu pembekuan -18°C dengan nilai hasil sebesar 0,67.

Kata Kunci: Ampas Tahu, Daging Analog, Enzim *Transglutaminase*, *Freeze Structuring*, Suhu Pembekuan.

Dafa Dinar IffatulMaulal Karimah. NPM 220331100014. *Production of Meat Analog from Okara (Soybean Pulp) Using Transglutaminase Enzyme and Freeze Structuring Technology. Under the Guidance of Cahyo Indarto, S.TP., MP, Ph.D. and Mojiono, S.TP., M.Si.*

ABSTRAC

Meat analog is a plant-based food product that was developed to resemble the characteristics of animal meat, one of which is using tofu pulp. Okara has the potential as a raw material for analog meat because it still contains quite high protein and fiber. This study aims to determine the effect of transglutaminase enzyme concentration and freezing temperature using the freeze structuring method on the characteristics of tofu pulp-based analog meat. This study used a factorial Complete Random Design (RAL) with two factors, namely the concentration of transglutaminase enzymes (1%, 2%, and 3%) and freezing temperature (-15°C and -18°C) with three repetitions. The parameters observed included texture (springiness, hardness, and chewiness), water holding capacity (WHC), color (L^* , a^* , b^*), protein content, and hedonic test. The results showed that the interaction of transglutaminase enzyme concentration and freezing temperature had a significant effect ($p < 0.05$) on the value of springiness and chewiness. The highest springiness value was obtained in the 2% enzyme treatment and the -15°C temperature was 0.82, while the highest chewiness value was obtained in the 1% enzyme treatment and the -18°C temperature was 344.22. The addition of transglutaminase enzyme had a significant effect on the hardness value, with the highest value of 771.89 at the enzyme concentration of 1%. Variations in freezing temperature have a noticeable effect on hardness, WHC, and lightness values. The highest WHC value was obtained at 3% enzyme treatment and -18°C temperature at 62.44%, while the highest protein content of 23.10% was also obtained at the same treatment. The results of the hedonic test showed that the entire treatment did not have a real effect on the acceptance rate of the panelists. Based on the De Garmo effectiveness index method, the best treatment was obtained in a combination of 1% transglutaminase enzyme and a freezing temperature of -18°C with a yield value of 0.67.

Keywords: Okara, Meat Analog, Transglutaminase Enzymes, Freeze Structuring, Freezing Temperature.