

Pembentukan *Soluble Complexes* Konsentrat Protein Blondo – Pektin serta Stabilitasnya pada Sistem Emulsi *Oil In Water*

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INTISARI

Pada proses pengolahan minyak kelapa (VCO) akan dihasilkan produk samping berupa blondo yang memiliki kandungan protein 24,22% dan akan meningkat menjadi 80,30% ketika diolah menjadi konsentrat. Kandungan protein pada blondo ini dapat dimanfaatkan sebagai emulsifier pada produk pangan. Namun, kemampuan pembentukan emulsi dan stabilitas emulsi yang dihasilkan dari penggunaan protein blondo sebagai emulsifier masih rendah. Kelarutan yang rendah pada protein blondo adalah salah satu faktor utama yang mengakibatkan rendahnya kemampuan emulsifikasi dari protein blondo. Pembentukan kompleks elektrostatik protein – pektin adalah salah satu cara yang dapat dilakukan untuk meningkatkan kemampuan emulsifikasi yang dimiliki oleh protein. Penelitian ini bertujuan untuk mengetahui kondisi proses terbaik meliputi pH, konsentrasi protein dan konsentrasi pektin dalam pembentukan kompleks protein – pektin via interaksi elektrostatik yang diduga dapat meningkatkan kemampuan emulsifikasi pada protein blondo.

Penelitian ini dilaksanakan dalam 3 tahap yaitu, tahap pertama adalah *defatting* dan identifikasi protein blondo, tahap kedua adalah pembentukan kompleks elektrostatik protein – pektin serta tahap ketiga penelitian evaluasi stabilitas kompleks elektrostatik protein – pektin yang terbentuk dalam sistem emulsi.

Hasil penelitian ini menunjukkan bahwa semakin tinggi rasio konsentrasi pektin-protein yang digunakan, maka akan menurunkan turbiditas dari kompleks yang terbentuk, meningkatkan kemampuan emulsifikasi dari protein blondo. Kondisi terbaik dalam pembentukan kompleks protein blondo – pektin adalah pada pH 4 dengan rasio 0,7 yang dibuat dari konsentrasi pektin dan konsentrasi protein dalam campuran berturut – turut adalah 0,35% dan 0,5% (w/v). Kompleks elektrostatik protein – pektin yang dihasilkan stabil terhadap perubahan pH 4 – 7. Nilai EAI yang dihasilkan dari kompleks protein blondo – pektin yang dibuat pada kondisi terbaik adalah 163,18 m²/g; nilai ESI sebesar 4673,32 menit dan stabilitas emulsi terhadap panas 90,34%.

Kata kunci: blondo, emulsi, interaksi elektrostatik, pektin, protein, *soluble complexes*

Formation of Soluble Complexes by Electrostatic Interactions of *Blondo* Protein Concentrate and Pectin as Emulsifying Agents

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ABSTRACT

Coconut oil by-product or *blondo* is obtained during wet processing for virgin coconut oil production which has 24,22% protein content and can increase up to 80,30% as if processed into concentrates. The high protein content in *blondo* can be used as an emulsifier in food products. However, the applications of *blondo* as emulsifier in food or beverage formula are still challenging due to their poor functional properties. Low solubility of the *blondo* protein is the main cause of low emulsion activity and stability in it. One promising way to improve ability of protein as emulsifiers is through the formation of protein and polysaccharide soluble complexes. The objective of this research was to obtain the best conditions of pH, protein and pectin concentration in the formation of biopolymer particles by electrostatic interactions of *blondo* protein concentrate and pectin to enhance its emulsifying properties.

This research was carried out in 3 stages. The first stage was identification and production of *blondo* protein, the second stage was to determine the effect of process conditions such as pH, and protein-pectin concentration in the formation of biopolymer particles by electrostatic interactions of *blondo* protein concentrate and pectin and the last stage of this research was evaluated the biopolymer particles that formed to enhance the emulsifying properties.

The results of this study showed that the emulsifying properties was increased and turbidity of complexes was decreased along with the higher ratio pectin – protein concentration. Complexes that were formed using protein – pectin ratio 0,7 that obtained from 0,5 wt% protein, 0,35 wt% pectin at pH 4 that obtained from these experiments had the best emulsifying properties among all. Complexation between protein and pectin is enhanced the EAI, ESI, and protection of self-aggregation protein during heating. Complexes that were formed remain stable across a range of pH values (pH 4 – 7). EAI, ESI, and heat stability value that obtained from the best condition to produce protein – pectin complexes were respectively, 163,18 m²/g; 4673,32 min and 90,34%.

Keywords: *blondo*, electrostatic interaction, emulsion, pectin, protein, soluble complexes