

CHARACTERISTICS OF LOW FAT MAYONNAISE FORMULATED USING RICE BRAN OIL, PORANG FLOUR AND KEFIR

ABSTRACT

Herly Evanuarini
12/336310/SPT/00146

Fat content on low fat mayonnaise are 30 – 50%. Producing low fat mayonnaise can be done by decreasing dispersed oil phase and increasing the aqueous phase, however the quality of mayonnaise is not optimal. The purposes of this research are: 1) to determine the concentration of porang flour as fat replacer and the characteristics of low fat mayonnaise emulsion based using Rice bran oil (RBO), 2) to determine the concentration of kefir as emulsifier replacer of egg yolk and the characteristics of low fat mayonnaise emulsion based Rice bran oil and 3) to evaluate the emulsion stability and oxidation stability of low fat mayonnaise during storage. The research methods were using experimental design. Data was analyzed using ANOVA and continued by Duncan's multiple range test. Sensory characteristic analyzed using Kruskal Walliss. Distribution of *droplet* emulsion show qualitatively by comparing *droplet* distribution. The used of RBO in mayonnaise formulation were 30, 40, and 50 % (v/v), porang flour were 0.1, 0.2, and 0.3% (w/v) as the fat replacer. The best formulation level will be used for the next formulation. The used of kefir is 20, 30, and 40% (v/v) as the emulsifier replacer of egg yolk at the following formula to obtain/ produce an optimal low fat mayonnaise. The best formulation in each RBO level, will be keep in the room temperature and refrigerator for about 0, 10, 20, and 30 days. The result showed that the used of porang flour as a fat replacer and kefir as emulsifier replacer significantly affect the quality physicochemical, rheological characteristics, sensory characteristics, oxidation stability and fatty acid profiles mayonnaise. Porang flour will increase the viscosity of the continuous phase so that the reduction in oil emulsion remains stable. Kefir as an emulsifier replacer lowering the pH of the mayonnaise, low levels of fat and cholesterol, form a barrier layer of the emulsion *droplet* surface thereby increasing the thickness of the interfacial phase and the emulsion becomes stable. Rheological characteristics of the resulting mayonnaise has a storage modulus value is higher than the loss modulus so that the resulting mayonnaise is solid. Sensory characteristics of the color, aroma, taste and acceptance, the average panelists provide value that indicates a good acceptance. The used of 50% RBO, 0,2% porang flour and 30% kefir are able to produce an optimal low fat mayonnaise which is stable during storage, the use of RBO extend the shelf life because it contains antioxidant tocopherol compounds, tocotrienol, and gamma oryzanol.

Keywords: Low fat mayonnaise, Rice bran oil, Porang flour, Kefir

KARAKTERISTIK LOW FAT MAYONNAISE YANG DIFORMULASI DARI RICE BRAN OIL, TEPUNG PORANG, DAN KEFIR

INTISARI

Herly Evanuarini
12/336310/SPT/00146

Low fat mayonnaise merupakan *mayonnaise* dengan kandungan lemak antara 30 – 50%. Upaya untuk membuat *low fat mayonnaise* dilakukan dengan menurunkan fase terdispersi dan meningkatkan fase pendispersi, namun menghasilkan *mayonnaise* yang kurang optimal. Penelitian ini bertujuan untuk: 1) menentukan konsentrasi tepung porang sebagai *fat replacer* dan mengetahui karakteristik emulsi *low fat mayonnaise* berbasis *Rice bran oil*, 2) menentukan konsentrasi kefir sebagai substitusi kuning telur dan mengetahui karakteristik emulsi *low fat mayonnaise* berbasis *Rice bran oil* dan, 3) mengevaluasi kestabilan emulsi dan kestabilan oksidasi *low fat mayonnaise* selama penyimpanan. Analisis statistik yang digunakan adalah analisis variansi pola searah dengan 3 ulangan dan dilanjutkan dengan *Duncan Multiple Range Test* (DMRT). Data karakteristik sensoris dianalisis dengan menggunakan uji *Kruskall Wallis*, distribusi *droplet mayonnaise* ditampilkan secara kualitatif dengan membandingkan distribusi *droplet*. Aktivitas antioksidan, kestabilan emulsi dan kestabilan oksidasi disajikan dengan analisis regresi. *Rice bran oil* digunakan dalam formulasi sebesar 30, 40, dan 50% (v/v), tepung porang digunakan sebesar 0,1, 0,2, dan 0,3% (w/v) sebagai *fat replacer*. Level terbaik digunakan untuk formulasi pembuatan *low fat mayonnaise* tahap 2. Penggunaan kefir sebesar 20, 30, dan 40% (v/v) sebagai *emulsifier replacer* kuning telur pada formula selanjutnya diharapkan mampu menghasilkan *low fat mayonnaise* yang optimal. Formulasi terbaik pada masing-masing level RBO, selanjutnya digunakan tahap 3, disimpan pada suhu ruang dan refrigerator selama 0, 10, 20, dan 30 hari. Hasil penelitian menunjukkan penggunaan tepung porang sebagai *fat replacer* dan kefir sebagai *emulsifier replacer* berpengaruh nyata terhadap kualitas fisikokimia, karakteristik reologis, karakteristik sensoris, kestabilan emulsi dan kestabilan oksidasi *mayonnaise* yang dihasilkan. Penggunaan tepung porang akan meningkatkan viskositas fase kontinu sehingga dengan pengurangan minyak, emulsi tetap stabil. Kefir sebagai *emulsifier replacer* menurunkan pH *mayonnaise*, kadar lemak dan rendah kolesterol, membentuk lapisan barrier permukaan *droplet* emulsi sehingga meningkatkan ketebalan fase interfasial dan emulsi menjadi stabil. Karakteristik reologis *mayonnaise* yang dihasilkan memiliki nilai *storage modulus* lebih tinggi dibanding *loss modulus* sehingga *mayonnaise* yang dihasilkan bersifat solid. Karakteristik sensoris terhadap rasa, aroma, warna dan penerimaan, rata-rata panelis menerima *low fat mayonnaise*. Penggunaan RBO 50%, tepung porang 0,2%, dan kefir 30% mampu menghasilkan karakteristik *low fat mayonnaise* optimal yang stabil pada penyimpanan.

Kata kunci: *Low fat mayonnaise*, *Rice bran oil*, Tepung porang, Kefir