

**LAPORAN AKHIR**  
**PENELITIAN UNGGULAN PERGURUAN TINGGI**



**Interaksi Protein Kasein dengan Tepung Porang yang Dimodifikasi  
dengan Metode Asam-Sonikasi dan Asam Microwave  
dalam Kefir Susu Kambing**

**Tahun ke 2 dari rencana 2 tahun**

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Judul Penelitian : Interaksi Protein Kasein dengan Tepung Porang yang Dimodifikasi dengan Metode Asam-Sonikasi dan Asam Microwave dalam Kefir Susu Kambing

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## ABSTRAK

Tujuan dari penelitian ini adalah menstabilkan interaksi tepung porang termodifikasi dengan kasein, serta stabilisasi sistem koloid minuman kefir susu kambing dengan tepung porang modifikasi.

pengembangan tepung porang sebagai bahan penstabil yang *compatible* dengan minuman susu fermentasi khususnya minuman kefir susu kambing melalui modifikasi menggunakan gelombang microwave dan waterbath ultrasound untuk menstabilkan interaksi tepung porang termodifikasi dengan kasein, serta stabilisasi sistem koloid minuman kefir susu kambing.

Interaksi Tepung porang modifikasi dengan kasein. Percobaan ini menggunakan perlakuan Rasio Porang modifikasi:kasein (0,2, 0,4, dan 0,6), pH 5,5; 5,0; 4,5 dan 4 serta konsentrasi sukrosa 5, 10 dan 15% (b/v) dengan tiga ulangan. Metode optimasi menggunakan *Response Surface Methodology* (RSM). Interaksi Tepung porang dan Glukomanan dengan kasein digunakan sebagai pembandingan. Interaksi tepung porang alami dan glukomanan dijadikan sebagai pembandingan.

Didapatkan model order 1 pengaruh rasio porang modifikasi menggunakan microwave dengan kasein, pH, dan sukrosa terhadap respon stabilitas emulsi sebagai berikut :  $Y = 301,180 + 409,495 X1 + 190,520 X2 - 101,226 X3$ . Pengujian hasil percobaan steepest ascent didapatkan kombinasi perlakuan yang paling optimal rasio porang kasein 1,6, pH 5,558, dan sukrosa 9,703%.

Keywords: Tepung porang termodifikasi, microwave, ultrasound, stabilisasi koloid, minuman kefir susu kambing

## ABSTRACT

The purpose of this research were The purpose of this research were optimization interaction between porang flour with casein and stabilization colloid system of goat milk kefir drink.

Interaction between modified konjac flour with casein. The treatmen were modified konjac flour/casein ratio (0,2, 0,4, and 0,6), pH 5,5; 5,0; 4,5; 4,0 and sucrose content 5, 10 and 15% (b/v). Optimization using *Response Surface Methodology* (RSM). The research steps: 1. Create first ordo respon function model; 2. Steepest accend; 3. *Central composite designs* (CCD) and respon surface analysis. Data analysed using Design-Expert, Versi 8.0 (STAT-EASE Inc., Minneapolis, USA). Analysis of varian (ANOVA) used for parameters estimation statistically. The Variables were: *Rheology*, Viscosity, emulsion stability, Functional group identification (FTIR), Microstructure (SEM).

The first order model of konjac flour modified using microwave: casein ratio, pH, and sucrose on emultion stability was:  $Y = 301,180 + 409,495 X1 + 190,520 X2 - 101,226 X3$ . Steepest ascent research gave optimal result at combination of konjac flour modified:casein ratio at,6, pH 5,558, and sucrose 9,703%.

Keywords: Modified konjac flour, microwave, emultion stability, casein, goat milk kefir drink

## RINGKASAN

### Modifikasi Tepung Porang Menggunakan Asam-Microwave

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Tujuan dari penelitian ini adalah menstabilkan interaksi tepung porang termodifikasi dengan kasein, serta stabilisasi sistem koloid minuman kefir susu kambing dengan tepung porang modifikasi.

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## SUMMARY

### Modifikasi Tepung Porang Menggunakan Asam-Microwave

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The purpose of this research were The purpose of this research were optimization interaction between porang flour with casein and stabilization colloid system of goat milk kefir drink.

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Keywords: Modified konjac flour, microwave, emultion stability, casein, goat milk kefir drink

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