RINGKASAN

Talas merupakan salah satu pangan lokal sumber karbohidrat tinggi pati yang berpotensi untuk dijadikan sumber diversifikasi pangan dengan menjadikannya tepung. Upaya untuk meningkatkan kandungan pati resisten dan serat pangan pada tepung talas dapat dilakukan dengan modifikasi secara biologi dan fisik. Talas memiliki kandungan amilosa sebesar 25,78% sehingga dapat diubah menjadi pati resisten. Kadar pati resisten dapat ditingkatkan melalui fermentasi menggunakan starter Bimo CF dilanjutkan dengan pemanasan bertekanan-pendinginan berulang. Penelitian ini bertujuan untuk 1) mengkaji pengaruh perlakuan variasi waktu fermentasi terhadap karakteristik sifat fisik dan kimia tepung talas, 2) mengkaji pengaruh perlakuan variasi jumlah siklus pemanasan bertekanan-pendinginan terhadap karakteristik sifat fisik dan kimia tepung talas, 3) mengkaji pengaruh interaksi antara waktu fermentasi dan jumlah siklus pemanasan bertekanan-pendinginan terhadap karakteristik sifat fisik dan kimia tepung talas termodifikasi, 4) menetapkan perlakuan terbaik menggunakan uji indeks efektivitas, dan 5) membandingkan karakteristik tepung talas termodifikasi perlakuan terbaik dengan tepung talas kontrol.

Penelitian dilakukan di Laboratorium Teknologi Pertanian, Fakultas Pertanian, Universitas Jenderal Soedirman, dan Laboratorium Pusat Inovasi Pangan, Purwokerto dari bulan November 2019 sampai April 2020. Rancangan percobaan yang digunakan adalah Rancangan Acak Kelompok (RAK). Faktor yang diteliti terdiri dari 2, yaitu variasi waktu fermentasi 24, 48, dan 72 jam dan variasi jumlah pemanasan bertekanan-pendinginan 1, 2, dan 3 siklus. Perlakuan tersebut diulang sebanyak 3 kali sehingga diperoleh 27 unit percobaan. Variabel yang diamati meliputi kadar air, amilosa, pati resisten, serat pangan, *hardness* (kekerasan), *cohesiveness* (kohesifitas), dan *crispiness* (kerenyahan).

Hasil penelitian menunjukkan 1) Variasi waktu fermentasi 24 hingga 72 jam secara signifikan ($p<0,05$) menyebabkan penurunan kadar air dan *cohesiveness* (kohesifitas) sebesar 42,43% dan 32% serta peningkatan terhadap kadar amilosa, pati resisten, dan serat pangan masing-masing sebesar 19,94%; 18,64%; dan 6,97%. 2) Variasi jumlah siklus pemanasan bertekanan-pendinginan sebanyak 1 hingga 3 siklus menyebabkan peningkatan kadar air, amilosa, pati resisten, serat pangan, dan *cohesiveness* (kohesifitas) secara signifikan masing-masing 0,82%; 11,42%; 35,32%; 8,80%; dan 24%. 3) Interaksi waktu fermentasi dengan jumlah siklus pemanasan bertekanan-pendinginan meningkatkan kadar amilosa, pati resisten, serat pangan, dan *cohesiveness* tepung talas termodifikasi secara signifikan. 4) Kombinasi perlakuan terbaik berdasarkan variabel kadar pati resisten, serat pangan, amilosa, *cohesiveness* (kohesifitas), *hardness* (kekerasan), dan *crispiness* (kerenyahan) adalah perlakuan fermentasi 72 jam dengan 3 siklus pemanasan bertekanan-pendinginan (F3S3). 5) Dibandingkan dengan tepung kontrol, tepung talas termodifikasi hasil perlakuan terbaik mengalami peningkatan kadar amilosa sebesar 35,95%, pati resisten 98,5%, dan serat pangan 37,85%.

Kata kunci: Fermentasi Bimo CF, pemanasan bertekanan-pendinginan, pati resisten, serat pangan, tepung talas termodifikasi.

SUMMARY

Taro is a local food source of high carbohydrate starch which has the potential to be a source of food diversification by making it flour. The efforts to increase amylose content, resistant starch, food fiber of taro flour can be done with biological and physical modification. Taro has an amylose content of 25.78% so that it can be converted into resistant starch. The levels of resistant starch can be increased through fermentation using a Bimo CF starter followed by pressurized heating-cooling cycles. This research aims to 1) examine the effect of the physical and chemical properties of taro flour with a variation of fermentation time, 2) examine the effect of the physical and chemical properties of taro flour with variations in the number of pressurized heating-cooling cycles, 3) examine the effect of the combination of fermentation time and the number of pressurized heating-cooling cycles on physical and chemical characteristics of modified taro flour, 4) determine the best treatment using the effectiveness index test, and 5) compare the characteristics of the modified best taro flour with control.

The research was conducted at the Agricultural Technology Laboratory, Faculty of Agriculture, Jenderal Soedirman University, and the Center for Food Innovation Laboratory, Purwokerto from November 2019 to April 2020. The experimental design used was a Randomized Group Design (RBD). The factors studied consisted of 2, namely variations in the fermentation time of 24, 48, and 72 hours and variations in the amount of heating pressure-cooling (1, 2, and 3 cycles). The treatment was repeated 3 times to obtain 27 units of trial. The observed variables included of water content, amylose, resistant starch, food fiber, hardness, cohesiveness, and crispiness.

The results showed that 1) The variation of fermentation time of 24 to 72 hours had a very significant effect ($p < 0.05$) causing a decrease in water and cohesiveness of 42.43% and 32% and an increase in amylose content, resistant starch, and food fiber respectively 19.94%; 18.64%; and 6.97%. 2) The variations in the number of pressurized heating-cooling 1 to 3 cycles have a very significant effect on increasing levels of water, amylose, resistant starch, food fiber, and cohesiveness, respectively 0,82%; 11.42%; 35.32%; 8.80%; and 24%. 3) The interaction of fermentation time with the number of pressurized heating-cooling cycles significantly influences the level of amylose, resistant starch, food fiber, and cohesiveness of modified taro flour. 4) The best combination of treatments based on variable levels of resistant starch, food fiber, amylose, cohesiveness, hardness, and crispiness is a 72 hour fermentation treatment with 3 cycles of pressure heating cooling (F3S3). 5) Compared to control flour, the best treatment flour increase amylose content by 35.95%, resistant starch by 98.5%, and food fiber by 37.85%.

Keyword: Bimo CF fermentation, pressurized heating-cooling, resistant starch, food fiber, modified taro flour.