RINGKASAN

Pati resisten adalah pati tahan cerna yang tahan terhadap hidrolisis enzim. Pembentukan kadar pati resisten dapat dilakukan salah satunya dengan perlakuan siklus pemanasan bertekanan-pendinginan. Pemanasan bertekanan-pendinginan yang dilakukan dengan memperbanyak siklus akan meningkatkan kadar pati resisten alami bahan. Namun, penggunaan siklus berlebih akan mengurangi efisiensi waktu, tenaga dan nilai ekonomis produk. Upaya peningkatan kadar pati resisten dengan siklus pemanasan bertekanan-pendinginan yang sedikit dapat dilakukan dengan proses fermentasi bakteri asam laktat. Talas beneng mengandung kadar pati 77,73%, amilosa 12,45% dan amilopektin 66,56%, sehingga sangat potensial untuk dijadikan produk pangan tinggi pati resisten. Penelitian ini bertujuan 1) Mengetahui pengaruh bakteri asam laktat yang terhadap kadar pati resisten tepung talas beneng, 2) Mengetahui pengaruh waktu fermentasi terhadap kadar pati resisten tepung talas beneng, 3) Mengetahui pengaruh siklus pemanasan bertekanan-pendinginan terhadap kadar pati resisten tepung talas beneng, 4) Mengetahui pengaruh interaksi waktu fermentasi dan siklus pemanasan bertekanan-pendinginan terhadap kadar pati resisten tepung talas beneng.

Penelitian terdiri dari tiga tahap. Tahap pertama adalah skrining bakteri asam laktat dengan rancangan acak kelompok non faktorial, meliputi perlakuan bakteri asam laktat: A1= *L. bulgaricus*, A2= *L. casei*, A3= *S. thermophilus*, A4= *L. bulgaricus* dan *L. casei* (1:1), A5= *L. bulgaricus* dan *S. thermophilus* (1:1), A6= *L. casei* dan *S. thermophilus* (1:1). Tahap kedua adalah perlakuan waktu fermentasi dari bakteri terpilih yang dikombinasikan siklus pemanasan bertekanan-pendinginan dengan rancangan acak kelompok faktorial, meliputi perlakuan waktu fermentasi: C0= 0 jam, C1= 18 jam C2= 24 jam. Perlakuan pemanasan bertekanan-pendinginan: D1= Pemanasan bertekanan-pendinginan satu siklus, D2= Pemanasan bertekanan-pendinginan dua siklus, D3= Pemanasan bertekanan-pendinginan tiga siklus. Tahap ketiga adalah pengukuran kadar asam oksalat dari hasil kombinasi perlakuan terpilih berdasarkan kadar pati resisten tertinggi tepung talas beneng. Data dianalisis dengan menggunakan analisis ragam (ANOVA). Jika berpengaruh nyata, dilanjutkan dengan DMRT (*Duncan's Multiple Range Test*) pada taraf 95%.

Hasil penelitian menunjukkan, penggunaan kombinasi bakteri asam laktat *L. casei* dan *S. thermophillus* menghasilkan kadar pati resisten tertinggi sebesar 5,66%. Waktu fermentasi 18 dan 24 jam meningkatkan kadar pati resisten yang sama, sebesar 4,46% dan 4,51%. Pemanasan bertekanan-pendinginan satu siklus, dua siklus dan tiga siklus menghasilkan kadar pati resisten yang sama, sebesar 3,81%, 4,26% dan 4,16%. Kombinasi *L. casei* dan *S. thermophillus* dengan waktu fermentasi 18 jam dan pemanasan bertekanan-pendinginan satu siklus dipilih untuk memproduksi kadar pati resisten tepung talas beneng.

SUMMARY

Resistant starch is a digestible starch that is resistant to enzyme hydrolysis. The formation of resistant starch content conducted autoclaving-cooling cycle treatment. Resistant starch is a digestible starch that is resistant to enzyme hydrolysis. The formation of resistant starch content can be done by autoclaving-cooling cycle treatment. Autoclaving-cooling performed with multiple cycles increase the natural resistant starch content of the ingredients. However, the use of excessive cycles decreased the efficiency of time, energy and the economic value of the product. Efforts to increased resistant starch content with fewer autoclaving-cooling cycles conducted with lactic acid bacteria fermentation process. Beneng taro contains starch 77.73%, amylose 12.45% and amylopectin 66.56%, so it has the potential to be used as a food product with high resistant starch type III. This study aims to 1) Determine the effect of lactic acid bacteria on the resistant starch content of beneng taro flour, 2) Determin the effect of fermentation time on resistant starch content of beneng taro flour, 3) Determin the effect of autoclaving-cooling cycle on resistant starch content of beneng taro flour, 4) Determine the interaction effect of fermentation time and autoclaving-cooling cycle on resistant starch content of beneng taro flour.

The study consists of three stages. The first stage is the screening of lactic acid bacteria using randomized block design non-factorial, the treatment of lactic acid bacteria: A1= L. bulgaricus, A2= L. casei, A3= S. thermophilus, A4= L. bulgaricus dan L. casei (1:1), A5= L. bulgaricus dan S. thermophilus (1:1), A6= L. casei dan S. thermophilus (1:1). The second stage is the fermentation time treatment of selected lactic acid bacteria combined with autoclaving-cooling cycle using randomized block design, the fermentation time treatment: C0= 0 hours, C1= 18 hours C2= 24 hours. Autoclaving-cooling treatment: D1= Autoclaving-cooling one cycle, D2= Autoclaving-cooling two cycles, D3= Autoclaving-cooling three cycles. The third stage is the determination of oxalic acid content from the results of the selected treatment combination based on the highest resistant starch content of taro beneng. Data are analyzed using diversity analysis (ANOVA). If there is a tangible effect, will be continued with DMRT (Duncan's Multiple Range Test) at level 95%.

The results showed that the use of a combination of lactic acid bacteria L. casei and S. thermophillus resulted in the highest content of resistant starch of 5.66%. Fermentation times of 18 and 24 hours increased the resistant starch content of the same, by 4.46% and 4.51%. One, two and three autoclaving-cooling cycle resulted in the same resistant starch content of 3.81%, 4.26% and 4.16%. The combination L. casei dan *S. thermophillus with 18 hours of fermentation time and one-cycle autoclaving-cooling was selected to produce the content of resistant starch of taro flour.*