

## ABSTRAK

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### **SUBSTITUSI TEPUNG TERIGU DENGAN PATI GANYONG HASIL AUTOCLAVING-COOLING PADA ROTI GAMBANG DENGAN SUMBER PROTEIN BERBEDA**

Skripsi, Fakultas Sains dan Teknologi (2021)

(xvii + 74 halaman; 18 gambar; 10 tabel; 13 lampiran)

Pati ganyong merupakan salah satu umbi-umbian yang khas Indonesia yang banyak tumbuh di daerah tropis. Amilosa pada pati ganyong dapat menyebabkan tekstur roti yang lebih lembut serta mempunyai peran untuk meningkatkan kadar pati resisten tipe 3 yang banyak dimanfaatkan dalam pembuatan produk pangan. Pati resisten dapat ditingkatkan salah satunya dengan metode *autoclaving-cooling* multisiklus. Tujuan dari penelitian adalah menentukan jumlah metode *autoclaving-cooling* yang menghasilkan pati ganyong dengan kadar amilosa tertinggi dan menentukan rasio substitusi tepung terigu dengan pati ganyong hasil *autoclaving-cooling* multisiklus terbaik untuk menghasilkan roti gambang dan menentukan pengaruh penambahan SPI sebagai pengganti telur terhadap karakteristik roti gambang. Tahap pertama penelitian berupa proses pemanasan menggunakan autoklaf (suhu 121°C, 15 menit) dan pendinginan (suhu 4°C, 24 jam) satu, dua dan tiga siklus terhadap pati ganyong, sedangkan pada tahap kedua roti gambang dibuat dengan rasio substitusi tepung terigu: pati ganyong (90:10, 80:20, 70:30, 60:40, 50:50) dan sumber protein (telur dan *soy protein isolate*). Metode *autoclaving* multisiklus dapat meningkatkan daya serap air dan kadar amilosa, tetapi menurunkan kadar amilopektin dan *lightness*. Kadar amilosa yang dihasilkan dengan *autoclaving-cooling* tiga siklus yaitu  $29,21 \pm 0,44\%$  lebih tinggi dibandingkan kontrol dan kadar pati resisten sebesar  $1,02 \pm 0,01\%$  yang lebih rendah dibandingkan dengan kontrol. Substitusi pati ganyong hasil *autoclaving-cooling* tiga siklus dengan sumber protein yang berbeda menurunkan volume pengembangan, *hardness* (pada semua perlakuan) dan *lightness* (rasio 60:40 dan 50:50 dengan sumber protein telur dan *isolate soy protein*), serta meningkatkan nilai *lightness* (rasio 90:10, 80:20, 70:30 dengan sumber protein telur dan *isolate soy protein*). Nilai volume pengembangan, *hardness*, dan *lightness* dengan rasio substitusi tepung terigu dengan pati ganyong hasil *autoclaving-cooling* tiga siklus 90:10 dengan sumber protein telur mendekati roti gambang kontrol dan memiliki kadar pati resisten  $1,87 \pm 0,01\%$  lebih tinggi dibandingkan-kadar pati resisten roti gambang kontrol sebesar  $1,62 \pm 0,02\%$ .

Kata kunci : *autoclaving-cooling*, karakteristik, roti gambang, substitusi, pati ganyong, sumber protein, telur, *soy protein isolate*

Referensi : 78 (2003 - 2020)

## ABSTRACT

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### **SUBSTITUTION OF WHEAT FLOUR USING AUTOCLAVING-COOLING CANNA STARCH ON GAMBANG BREAD USING DIFFERENT SOURCES OF PROTEIN**

Skripsi, Fakultas Sains dan Teknologi (2021)

(xvii + 74 pages; 18 figures; 10 tables; 13 appendices)

Canna starch is a typical Indonesian tuber that grows in many tropical areas. Amylose content in canna starch could cause a softer bread texture and also play a role in increasing the level of type 3 resistant starch which has been used for inovates new food products. One of the ways to increase resistant starch is the multi-cycle autoclaving-cooling method. The purpose of this study were to determine the effect of autoclaving-cooling cycle that produced canna starch with the highest amylose content and to determine the ratio of substitution of wheat flour using modified canna starch to produce gambang bread and to determine the effect of adding SPI as an egg replacer on the characteristics of gambang bread. The first stage of the research is autoclaving process (temperature of 121°C, 15 minutes) and cooling process (temperature of 4°C, 24 hours) of one, two and three cycles of canna starch, while in the second stage, gambang bread is made with the substitution ratio of wheat flour: canna starch (90:10, 80:20, 70:30, 60:40, 50:50) and with different sources of protein (eggs and soy protein isolate). The multicycle autoclaving method would increased water absorption and amylose levels, but reduced amylopectin levels and lightness. The amylose content produced by three cycles of autoclaving-cooling was  $29.21 \pm 0.44\%$  higher than the control and the resistant starch content was  $1.02 \pm 0.01\%$  lower than the control. Substitution of canna starch with three cycles of autoclaving-cooling and different source of protein will reduced the volume of swelling, hardness (in all substitution ratio) and lightness (in substitution ratio 60:40 and 50:50 by using eggs and soy protein isolate), and increased the value of lightness (in substitution ratio 90:10, 80:20, and 70:30 with by using eggs and soy protein isolate). The value of hardness of gambang bread with 90:10 substitution ratio of canna starch and in the use of egg as protein is close to control and has a resistant starch content ( $1.87 \pm 0.01\%$ ) higher than control ( $1.62 \pm 0.02\%$ ).

**Keywords** : autoclaving-cooling, characteristic, gambang bread, substitution, canna starch, protein sources, eggs, soy protein isolate

**References** : 78 (2003 - 2020)