

ABSTRACT

Nathania Sofie (00000013488)

STUDY OF ADDITION OF CRUDE EXTRACTS OF AFRICAN BITTER (*VERNONIA AMYGDALINA* DEL.) OR GREEN GRASS JELLY (*CYCLEA BARBATA* MIERS) LEAF TO COWPEA (*VIGNA UNGUICULATA*) YOGHURT

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(xix + 86 pages: 32 figures, 15 tables, and 21 appendices)

Bitter leaf or *Vernonia amygdalina* Del. is a functional food plant known for its strong antioxidant activity. It is consumed as vegetable and often used in the treatment and medicine of various diseases. Green grass jelly or *Cyclea barbata* Miers is known as cincau hijau and has been commonly consumed in Indonesia. It is considered to have high antioxidant activity and thus a potential source of antioxidant. Meanwhile, non-dairy yoghurt such as cowpea yoghurt is a vegetable milk derived functional food by which the cowpea (*Vigna unguiculata*) itself provides the benefit of having high protein content but low fat content. The objective of this research was to study the antioxidant characteristics of cowpea yoghurt added with African bitter or green grass jelly leaf crude extract. The crude extract of African bitter leaf has the antioxidant activity of 76.765 ± 2.261 ppm, total phenolic content of 61.787 ± 0.518 mg GAE/g and total flavonoid content of 56.063 ± 4.688 mg QE/g. The crude extract of Green grass jelly leaf crude extract has the antioxidant activity of 140.079 ± 2.532 ppm, total phenolic content of 30.252 ± 0.941 mg GAE/g and total flavonoid content of 10.786 ± 0.017 mg GAE/g. Different concentrations of African bitter leaf and green grass jelly leaf crude extract (0, 1, 2, 3%) were added to the cowpea yoghurt incubated for different period of time (14, 18, and 22 h) to observe their antioxidant characteristics. Three best cowpea yoghurts were selected based on antioxidant characteristics and subjected to sensory evaluation by 70 panelists to see their acceptance towards the sample. The results showed that cowpea yoghurt with 2% African bitter leaf crude extract with fermentation time of 14 h and cowpea yoghurt with 2% Green grass jelly leaf crude extract with fermentation time of 18 h were selected by the panelists with the antioxidant activity of $3,661 \pm 62.579$ & $8,871 \pm 245.888$ ppm, total phenolic content of 413.117 ± 6.800 & 369.772 ± 1.162 mg GAE/L and total flavonoid content of 40.439 ± 2.535 & 37.078 ± 3.102 mg QE/L, respectively.

Keywords: Antioxidant characteristics, bitter leaf, green grass jelly, extract, cowpea yoghurt, *Vernonia amygdalina* Del., *Cyclea barbata* Miers, *Vigna unguiculata*

References: 51 (1992-2018)

ABSTRAK

Nathania Sofie (00000013488)

STUDI MENGENAI PENAMBAHAN EKSTRAK KASAR DAUN AFRIKA (VERNONIA AMYGDALINA DEL.) ATAU DAUN CINCAU HIJAU (CYCLEA BARBATA MIERS) TERHADAP YOGURT KACANG TUNGGAK (VIGNA UNGUICULATA)

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Daun Afrika atau *Vernonia amygdalina* Del. adalah tanaman pangan fungsional yang dikenal karena aktivitas antioksidannya yang kuat. Daun Afrika biasanya dikonsumsi sebagai sayuran dan sering digunakan untuk pengobatan berbagai penyakit. Daun cincau hijau atau *Cyclea barbata* Miers telah umum dikonsumsi di Indonesia. Daun cincau hijau memiliki aktivitas antioksidan yang tinggi sehingga merupakan sumber antioksidan yang potensial. Sementara itu, yoghurt nabati sudah banyak diteliti dan diproduksi saat ini, salah satunya merupakan yoghurt kacang tunggak (*Vigna unguiculata*) yang memiliki kandungan protein yang tinggi dan kandungan lemak yang rendah, namun memiliki aktivitas antioksidan yang lemah. Oleh karena itu, dalam penelitian ini, aktivitas antioksidan dari yoghurt kacang tunggak yang ditambahkan dengan ekstrak daun Afrika maupun daun Cincau diteliti. Ekstrak kasar daun Afrika memiliki aktivitas antioksidan $76,765 \pm 2,261$ ppm, kandungan fenolik total $61,787 \pm 0,518$ mg GAE/g dan kandungan flavonoid total $56,063 \pm 4,688$ mg QE/g. Ekstrak kasar daun Cincau memiliki aktivitas antioksidan $140,079 \pm 2,532$ ppm, kandungan fenolik total $30,252 \pm 0,941$ mg GAE/g, kandungan flavonoid $10,786 \pm 0,017$ mg GAE/g. Ekstrak kasar daun Afrika dan daun Cincau ditambahkan ke yoghurt kacang tunggak dalam konsentrasi yang berbeda-beda (0, 1, 2, 3 %) dengan waktu inkubasi yang berbeda-beda (14, 18, 22 jam) untuk diamati karakteristik antioksidannya. Tiga yoghurt kacang tunggak terbaik dipilih berdasarkan aktivitas antioksidan untuk dilakukan evaluasi sensorik oleh 70 panelis. Hasil penelitian menunjukkan bahwa yoghurt kacang tunggak dengan 2% ekstrak daun Afrika yang diinkubasi selama 14 jam dan yoghurt kacang tunggak dengan 2% ekstrak daun Cincau yang diinkubasi selama 18 jam dipilih oleh panelis dengan aktivitas antioksidan sebesar $3,661 \pm 62.579$ dan 8.871 ± 45.888 ppm, kandungan fenolik total 413.117 ± 6.800 dan 369.772 ± 1.162 mg GAE/L dan kandungan flavonoid total 40.439 ± 2.535 dan 37.078 ± 3.102 mg QE /L.

Kata kunci: Karakteristik antioksidan, daun afrika, cincau hijau, ekstrak, yoghurt kacang tunggak, *Vernonia amygdaline* Del., *Cyclea barbata* Miers, *Vigna unguiculata*

Referensi: 51 (1992-2018)