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Penelitian/*Research*

**PENGARUH PROSES PENGOLAHAN SINGKONG (*Manihot esculenta Crantz*)
TERHADAP KANDUNGAN SKOPOLETIN**

*The Effect of Cassava (*Manihot esculenta Crantz*) Processing on Scopoletin Content*

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RINGKASAN : Penelitian mengenai pengaruh proses pengolahan terhadap kandungan skopoletin pada produk singkong telah dilakukan. Tujuan penelitian ini untuk mengetahui karakteristik perubahan kandungan skopoletin pada pasca panen dan pengolahan singkong. Ruang lingkup penelitian mencakup pembuatan produk antara (mokaf dan tapioka) dan produk olahan dari singkong (singkong goreng, kripik singkong, singkong rebus dan singkong kukus) serta analisis kandungan skopoletin pada tahapan proses pembuatan produk antara dan produk akhir sedangkan hasil analisis kandungan skopoletin pada produk menunjukkan adanya penurunan kandungan skopoletin. Persentase kandungan skopoletin produk antara dan produk akhir terhadap kandungan awal pada bahan baku bervariasi antara 5,77% (keripik singkong) sampai 97,10% (mokaf). Proses pengolahan singkong untuk konsumsi langsung yang dapat mempertahankan kandungan skopoletin cukup tinggi adalah proses kukus (72,35%).

Kata kunci: singkong, pengolahan, skopoletin

ABSTRACT: *Top of Form Research on processing effect on the content of scopoletin in cassava products has been conducted. The purpose of this study was to characterize changes of scopoletin content in cassava after post-harvest and processing. Scope of the study included the preparing of intermediate products (mokaf and tapioca) and final cassava-based products (fried cassava, cassava chips, boiled cassava and steamed cassava) and analysing their scopoletin content. The results of scopoletine content indicated that there was a decrease in scopoletin content in the final product.*

The percentage content of scopoletin intermediate products and final products of the initial content of the raw material varies between 5.77% (cassava chips) to 97.10% (mokaf). The processing of cassava for direct consumption which can retain their high scopoletin is the steamed (72.35%)

Keywords: cassava, processing, scopoletin

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Penelitian/Research

POTENSI ANTIBAKTERI DARI VINEGAR BAMBU ANDONG (*Gigantochloa pseudoarundinaceae*) DAN BAMBU AMPEL (*Bambusa vulgaris* Schrad var. *striata*)

*The Antibacterial Potency of Bamboo Vinegar from Andong Bamboo (*Gigantochloa pseudoarundinaceae*) and Ampel Bamboo (*Bambusa vulgaris* Schrad var. *striata*)*

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ABSTRACT: *Bamboo vinegar, a brownish-red transparent liquid with a smoky flavor, is obtained from smoke condensation in carbonization (pyrolysis) process of bamboo. Its liquid compose of 80~90% water and a mixture of more than 200 organic ingredients, such as acetic acid, phenol and aldehyde. In general, the compounds is functioned as antimicrobial, antioxidant, give smoky colour and flavor in smoke products. This research is aimed (1) to study the process of bamboo vinegar; (2) to study the purification process of bamboo vinegar and its characteristics; and (3) to study antibacterial potency of purified bamboo vinegar from andong and ampel bamboo.*

*The result indicated that purification process of bamboo vinegar by distillation method could reduce content of its hazardous compounds, especially tar and polycyclic aromatic hydrocarbon (PAH). The content of BaP and BaA range from undetectable until 10 ppb and tar range from 0.1 % - 0.4 %. The antibacterial activity resulted especially against *Staphylococcus aureus* and *Pseudomonas*. The result showed that antibacterial activity of vinegar from andong and ampel bamboo start from 5 % for *Staphylococcus aureus*. Meanwhile the other bacteria, *Escherichia coli*, *Salmonella* dan *Pseudomonas* were more effective at higher concentration. The result showed that antibacterial activity was influenced by acid and fenol content. Higher acid and fenol content would tend higher antibacterial activity. More over, antibacterial activity might also influenced by sinergism of acid and fenol in vinegar.*

The research can be concluded that bamboo vinegar could be purified by destilation. which can reduce tar dan PAH content and also can increase acid and fenol content which have an antibacterial activity role. Vinegar which was pirolized at 200 °C – 400 °C, was tend to have higher antibacterial activity.

Keywords: bamboo vinegar, antibacterial, andong bamboo, ampel bamboo, pathogenic and spoilage bacteria

Penelitian/Research

**STUDI KANDUNGAN OLIGOSAKARIDA BERBAGAI JENIS UBI JALAR DAN
APLIKASINYA SEBAGAI MINUMAN FUNGSIONAL**

Study of Oligosacharide content from various sweet potatoes and application as functional drink

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ABSTRACT : *In order to support food diversification, the effort to increase value-added sweet potatoes, which are very abundant in Indonesia, is necessary to conduct. Therefore, the research was conducted to study the content of oligosacharide from various cultivars of sweetpotatoes, to develop formulation and to examine consumer acceptance of sweetpotatoes drink. The steps of the research were consisted of production of sweetpotatoes flour, extraction of oligosacharide, analysis of oligosacharide content, production of sweetpotatoes drinks and its organoleptic test.*

Sweetpotatoes flour were made by slicing the tuber, drying at 55 – 60 °C for ± 20 hours, grinding and sieving with mesh 80. The flour extracting was done using ethanol 70 % for 15 hours and then evaporated using rotary evaporator. The oligosacharide content was analyzed by thin layer chromatography and HPLC. Sweetpotatoes drink were produced as follow: size reduction, blanching, water addition with ratio flour to water of 1:2, filtering to separate the starch and formulation.

The result showed that the highest oligosacharides content was white sweetpotatoes with raffinose content 0,15 %, 0,02 % stachiose, dan 0,11 % maltohexose, while the highest oligosacharide content of sweetpotatoes drink was red sweetpotatoes with 0,07 % raffinose. Hedonic test showed that red sweetpotatoes drink with 10 % sugar and 0,1 % citric acid was the most preferred with average score for taste, color were 3.50 and for flavor was 3.45.

Keywords: oligosacharides, sweetpotatoes, raffinose, sweet potatoes drinks

Penelitian/Research

MEMPELAJARI PEMBUATAN NANO-KAROTENOID ASAL KONSENTRAT MINYAK SAWIT

The Study of The Nano-Carotenoid Preparation from Concentrates of Crude Palm Oil

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ABSTRACT: *The research activities of nano-encapsulation manufacturing from palm oil carotenoids have been conducted. This study was divided into the following stages: (1) the manufacture of nano carotenoid concentrations by sonication process at 80% intensity for 1-5 hours, (2) nano emulsion formulation of carotenoids, (3) the preparation of nano-carotene formula for drying process, (4) product analysis. The smallest particle size of carotenoid concentrations obtained by 2 hours sonication process with 44579.31 ppm carotenoid content. The best composition for nano-carotenoid emulsion is concentrat: water: Tween-80 for 2:2:1. Powder form obtained by using spray drying method. The results of the analysis shows moisture of the products is 4.25%, while carotenoid content of the product is 9496.663 ppm.*

Keywords: nano-encapsulation, carotenoid, crude palm oil

RINGKASAN: Penelitian pembuatan produk nano-enkapsulasi karotenoid asal minyak sawit telah dilakukan. Tujuan penelitian ini adalah untuk mempelajari pembuatan nano-karotenoid dengan teknologi sonikasi serta mempelajari proses pembuatan serbuk nano-karotenoid sebagai alternatif sediaan suplementasi provitamin A. Penelitian ini meliputi 4 tahap kegiatan yaitu: (1) pembuatan nano konsentrat karotenoid dengan cara sonikasi pada intensitas 80% selama 1-5 jam; (2) formulasi emulsi nano karotenoid; (3) pembuatan formula untuk nano-karoten kering; (4) analisis produk. Hasil penelitian diperoleh bahwa ukuran partikel produk nano konsentrat karotenoid yang terbaik diperoleh dengan proses sonikasi dalam waktu 2 jam yaitu kurang dari 100 nm dengan kandungan karotenoid sebesar 44.579,31 ppm. Adapun formula emulsi nano karotenoid yang stabil menggunakan emulsifier Tween 80 dengan perbandingan konsenstrat:air:emulsifier adalah 2:2:1. Produk serbuk nanokaroten terbaik dibuat dengan menggunakan penyalut maltodekstrin (1:1) dengan cara pengering semprot. Hasil analisis produk yaitu kadar air 4,25% serta kandungan karotenoid dalam formula emulsi produk enkapsulasi adalah 9.496,663 ppm.

Kata kunci : nano-enkapsulasi, karotenoid, minyak sawit

**SISTEM KETERTELUSSURAN PADA INDUSTRI PANGAN DAN PRODUK HASIL
PERTANIAN**

The Traceability System in Food Industry and Agricultural Products

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ABSTRAK : Ketertelusuran adalah kemampuan dari suatu sistem untuk menelusuri produk dan riwayatnya melalui seluruh atau bagian dari rantai produksi, mulai dari saat pemanenan hingga pengangkutan, penyimpanan, pengolahan, distribusi dan penjualannya. Permintaan terhadap ketertelusuran pada produk pangan dan hasil pertanian dalam 10 tahun terakhir ini cenderung meningkat secara signifikan seiring dengan meningkatnya kasus yang berhubungan dengan keamanan pangan dan penyakit langka (seperti penyakit kuku dan mulut, penyakit sapi gila, kontaminasi mikrobiologi pada produk segar, senyawa dioksin pada produk peternakan) serta meningkatnya perhatian dampak pangan hasil rekayasa genetika (GMO) pada rantai pangan manusia dan lingkungan. Implementasi sistem ketertelusuran mempunyai aspek-aspek penting yang berhubungan dengan keamanan pangan, mutu dan labeling produk pangan. Cepatnya perkembangan pada teknologi informasi telah menyebabkan kemungkinan untuk menerapkan sistem ketertelusuran dalam industri pangan. Bagi produsen pangan skala kecil, pengembangan sistem secara kelompok dan sertifikasinya memudahkan dalam mengatasi kendala yang dihadapi pada penerapan sistem ketertelusuran, dengan penguatan kapasitas dalam pemilihan jenis teknologi tepat guna untuk ketertelusuran. Dalam tulisan ini akan dibahas mengenai konsep dan definisi ketertelusuran, keuntungan sistem ketertelusuran bagi industri pangan, pemerintah dan konsumen, implementasi sistem ketertelusuran pada produk pangan dan produk hasil pertanian, serta kendala dan peluang penerapan sistem ketertelusuran.

Kata kunci : ketertelusuran, sistem, industri pangan, produk hasil pertanian.

ABSTRACT : Traceability is ability of a system to track a product batch and its history through the whole, or part, of production chain from harvest through transport, storage, processing, distribution and sales. The demand for traceability in food and agro-food products has significantly expanded in the last few years with increasing incidence of food-related safety hazards and scares (such as tooth-and mouth disease, mad cow disease, microbiological contamination of fresh produce, dioxin in poultry) and increasing concern over the impacts of genetically modified organisms (GMO) on human food chain and environment. Implementing traceability system has important aspects that relate to food safety, quality and product labeling. Rapid advances in information technology have made it is possible to implement traceability systems within the food industry. For small-scale producers, group system development and certification may ease some of the constraints in implementing traceability system, along with capacity strengthening in selecting appropriate technologies for traceability. This review will explore the traceability concepts and definitions, benefits of traceability for food industry, government, and consumers, the implementing of traceability on the food and agro-food chain products, and the constraints and opportunities in implementing of traceability systems.

Keywords : traceability, system, food industry, agro-food products.