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Penelitian/*Research*

**PENGARUH PENAMBAHAN KULTUR CAMPURAN TERHADAP WAKTU
FERMENTASI BIJI KAKAO**

The Effect of Cultur Supplement Mixing on Cocoa Beans Fermentation Period

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ABSTRACT : *The research of mixing culture supplement on cocoa beans fermentation period has been conducted. The aim of this research is to know the effect of composite culture additive on fermented period. The variable in this treatment covered are temperature, acidity, poliphenol, reduction sugar, fermentation index, and sensoric test. The process of fermentation was used to cocoa bean that have been natural incubated. Cocoa bean was added with mixing culture (*Saccharomyces cerevisiae*, *Lactobacillus casei*, *Acetobacter aceti*, and *Bacillus subtilis*) in water (nutrient broth). This treatment as well as was compare with natural fermentation and fermentated process through the activator adding. The period of fermentation are 2, 3, 4, 5, 6, and 7 days. The research result shown that the optimum of period fermented was found in three days on treatment mixing culture supplement with fermentation index i.e. 1.0704, optimum temperature i.e. 49°C, acidity i.e. 5.25, poliphenol i.e. 2.52%, and reduction sugar i.e. 4,13%.*

Key words : *Cacao beans, fermentation, mixed culture, fermentation index*

Penelitian/Research

PENELITIAN EFEKTIVITAS PRODUKSI BODIESEL MINYAK SAWIT MENGGUNAKAN REAKTOR *STATIC-MIXER*

Research on Effectiveness of Production of Palm Oil Biodiesel Using Static-Mixer Reactor

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ABSTRACT: *Research on Effectiveness of Production of Palm Oil Biodiesel Using Static-Mixer Reactor has been conducted. The aim of research was to evaluate the faster and more effective of production process of biodiesel compare to the existing conventional method using blade-agitator. The production method investigated was related to application of Static-Mixer Reactor in the biodiesel production. The results show that application of Static-Mixer Reactor in the biodiesel production give the faster trans-esterification reaction speed in producing Fatty Acid Methyl Ester/FAME compare to blade-agitator reactor. To produce FAME 96,5% as required in SNI Biodiesel (SNI 04-7182-2006), Static-Mixer Reactor only needs 15, 10, dan 5 minutes for temperature 50, 60 and 70⁰C while blade-agitator reactor needs 68, 60, and 50 minutes for temperature 50, 60 dan 70⁰C. Beside that application of Static-Mixer Reactor also could produce biodiesel with the viscosity and acid value better than biodiesel which produced by blade-agitator reactor. The results also show that application of static mixer could produce biodiesel that meet the requirements of Indonesia Nasional Standar for Biodiesel (SNI) 04-7182-2006. These could be seen in the quality parameters related to acid value, glycerol total, viscosity, water content, and density.*

Keywords: *static-mixer, FAME, trans-esterification, viscosity, acid value, biodiesel*

Penelitian/Research

STUDI PEMBUATAN TEH HIJAU INSTAN DENGAN FLAVOR DARI EKSTRAK DAGING BUAH KWENI (*Mangifera odorata*, Grift) MENGGUNAKAN PENDINGINAN SEMPROT

Study on Green Tea Instant Processing with Kweni Fruit Flavor Extract (*Mangifera odorata*, Grift) Using Spray Drying

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ABSTRACT : *Study of green tea instant processing with flavor extracted of kweni fruit (*Mangifera odorata* Grift) using spray drying has been conducted. The objectives of this research were to obtain green tea instant with flavor of kweni fruit as product diversification of green tea and to observe the effect of addition of kweni fruit extracted and Arabic gum to maltodextrin ratio toward the quality of green tea instant product. There were two stages of this research, i.e. the previous study and finally the main study. The previous study were : (1) Chemical properties analysis from green tea and kweni fruit including water content, volatile reducing substance (VRS) value, ash content, tannin and catechin content, and microorganism contamination in terms of total plate count and coliform bacteriae; (2) Determination the best condition for green tea extraction and (3) Determination the optimal condition for kweni fruit extraction. Green tea of grade III was extracted using hot water in 90°C during 5, 8 and 11 minutes with green tea and hot water ratio at 10 : 100, 15 : 100 and 20 g : 100 ml; while kweni fruit was extracted using etanol 90% concentration during 15, 30 and 45 minutes with kweni fruit to etanol ration at 100 : 100, 100 : 200 and 200 g : 100 ml). The main study were green tea processing and product quality evaluation including the yield, water content, VRS value, ash content, tannin content and solution ability and sensory analysis of green tea instant product using hedonic test. The results showed that the addition of flavor extract from kweni fruit in producing green tea instant has given significantly effect to the value of yield, VRS and ash content; however Arabic gum has given significantly effect to the VRS value. Generally, organoleptic evaluation showed that panelis more like the taste, aroma and color of the product. The best green tea instant product with flavor extracted from kweni fruit was obtained from A₁B₃ treatment (Arabic gum to maltodextrin ratio at 9 : 1 and kweni fruit extrac concentration 20%) with the yield 7.64%, water content 7.14, VRS 7.25 meq/g, ash content 8.72%, tannin content 8.96% and salvation 89.47%.*

Key words : green tea instant, kweni fruit, flavor, spray drying

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Penelitian / Research

ANALISIS TEKNO EKONOMI UNIT PRODUKSI SERBUK EKSTRAK DAUN TORBANGUN
(*Coleus amboinicus* Lour)

Techno Economic Analysis of Production Unit of Torbangun (*Coleus amboinicus* Lour) Extract Powder

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ABSTRACT: *Torbangun leaves could be extracted to produce powder which could be used as a raw material for nutraceutical or medicinal industry. Techno economic analysis was conducted to evaluate the financial viability of the production unit of torbangun extract powder. The results of analysis showed that the production unit of torbangun extract powder was very feasible financially. Based on the techno economic analysis, the production unit of torbangun extract powder resulted the Net Present Value (NPV) i.e. Rp 650.170.746, Internal Rate of Return (IRR) i.e. 36,73 % and pay back period i.e. 2,72 years. The break even point of the production unit of torbangun extract powder was Rp 242.979.681 per year and the based price was Rp 355.239 per kg. The sensitivity analysis showed that the viability of the production unit of torbangun extract powder was very sensitive to the changes in the raw material cost, product price, and yield of the process. On the other hand the changes in the investment cost, labor cost, electricity, and working days, were not sensitive to the viability of production unit of torbangun extract powder.*

Keywords: *torbangun extract, NPV, IRR, PBP, BEP, sensitivity analysis*

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Ulasan Ilmiah/Review

**PERAN COKELAT SEBAGAI PRODUK PANGAN YANG MENYEHATKAN
DAN KEMUNGKINAN PENGEMBANGANNYA SEBAGAI PANGAN FUNGSIONAL
DALAM INDUSTRI PANGAN**

The Role of Chocolate as Healthy Food Products and Its Possibility Product Development as Functional Food in the Food Industry

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ABSTRACT : *Cocoa-derivatives (Cocoa powders, chocolate, cocoa related products) have been known for hundred of years. These products were consumed all over the world and were largely studied due to their significant content of phytochemicals (procyanidin, flavonoids, catechin, epicatechin) with great health effects. Recent scientific articles showed that the high quality and quantity of antioxidants in chocolate and the flavonoids content in cocoa are able to reduce the number of radicals in the body that contribute to medical problems, such as cardiovascular diseases and cancer. They can also act as anti-aging. The objectives of this paper are : (1) To prepare a scientific information for scientists and researchers in exploring on R & D of food products diversification based on cacao as health food; (2) To prepare an information for R & D institutions in developing more comprehensive understanding of interactions that occur among cocoa derived foods, medicines and dietary supplement; and (3) to prepare an information for society to increase their interest in cacao and chocolate consume with better understanding of their benefits and weakness as health food products. This article studied a brief review of the potential strength of cocoa and chocolate and its effects on health and the weakness of cocoa and chocolate products as health food products, also its possibility product development as functional food in the food industry.*

Keywords : *cacao, chocolate, flavonoids, catechin, epicatechin, antioxidants, antiradicals, health food.*