

Nutrient Digestibility of Beef Cattle Ration with Total Mixed Fiber Amoniation (TMFA) as Basal Feed and Organic Mineral Supplementation by In Vitro

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Abstract

Abstract should be written as summaries of the content with following substance, the aim of the research, research method, and the results, and the conclusions. It should be written less than 200 words.

Keywords: Up to 5-7 words

Abstrak (Indonesian)

Abstrak harus ditulis sebagai ringkasan dari seluruh isi tulisan dengan isi sebagai berikut, latar belakang, tujuan penelitian, metode penelitian, hasil serta kesimpulan. Abstrak harus di tulis kurang dari 200 kata.

Kata Kunci: Berisi 5-7 kata penting

INTRODUCTION

Surface active agents known as surfactants are compounds used to lower the surface tension, interfacial tension and improve the stability of the emulsion system. The surfactants are main component in soap, shampoo, laundry powder and detergent. Linear Alkylbenzena Sulfonate (LAS) is the most extensively used surfactant nowadays. This surfactant was synthesized from petrochemicals, which are non-renewable resources therefore alternative a resource of surfactants is necessary. There are four types of surfactants, namely nonionic, anionic, cationic and amphoteric [1]. The anionic surfactants are type of surfactant widely used in many industries. Estimated the total product of surfactants to be 60% is anionic surfactant [2]. One of anionic surfactant is Methyl Ester Sulfonate (MES) which has a negative charge as surface active [3].

MATERIALS AND METHODS

Materials

Ketapang seed samples was taken from Indralaya, Ogan Ilir, South Sumatera. The chemical and reagent for surfactant synthesise include n-hexane, methanol, activated carbon, anhydrous Na₂SO₄, NaHSO₃, NaOH and HCl were purchased from Merck. The distilled water was used to make the reagents.

Synthesis of Methyl Ester

Synthesis of methyl ester was conducted by reacting ketapang seed oil with methanol using NaOH catalyst. Volume ratio of methanol to ketapang seed oil is 80:20 and heated at 60°C. The amount of NaOH added is proportional to amount of ketapang seed oil. The mixture was heated for 2 hours and then cooled to form 2 layers. The top layer is an ester while the bottom layer is glycerol. These two layers were separated by a separating funnel. Ester layer was neutralized with 0.05 M HCl and washed with distilled water. Methyl ester product was determined by using Chromatography Gas-Mass Spectroscopy (GC-MS) QP2010S Shimadzu.

Analysis Data

Equations should be placed flush-left with the text margin. Equations are centered and numbered consecutively starting from 1 as follows:

$$E(F) = E(0) + \sum_i \left(\frac{\delta E(F)}{\delta F_i} \right) F_i \quad (1)$$

Include a description of each symbol.

RESULT AND DISCUSSION

Synthesis of Methyl Ester Sulfonate

Surfactants from vegetable oil is biodegradable and has good detergency. In this study, methyl ester sulfonate (MES) used as surfactant was synthesized from ketapang seed oil and sodium bisulfite. The seed ketapang was illustrated in Figure 1. Oil from seed ketapang extracted using n hexane by sohxletation.



Figure 1. Seed of Ketapang

Some methyl esters contained in ketapang seed oil including methyl palmitoleic (0.04%), methyl linoleic (78.40%), methyl palmitate (0.31%), methyl stearate (6.67%), methyl oleic (14.03%), methyl palmitolenat (0.22%) and methyl eikosenoat (0.33%). The Ketapang seed contain list in Table 1. Methyl linoleic was used as the basis for calculating mole of methyl ester due to its highest percentage in the oil.

Table 1. Ketapang seed oil

Methyl ester	Prosentase (%)
methyl palmitoleic	0.04
methyl linoleic	78.40
methyl palmitate	0.31
methyl stearate	6.67
methyl oleic	14.03

methyl	0.22
palmitolenat	
methyl eikosenoat	0.33

CONCLUSION

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ACKNOWLEDGMENT

Please provided a complete contract with funding source.

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