

PEMUCATAN MINYAK KELAPA SAWIT MENTAH DENGAN LEMPUNG  
TERMODIFIKASI OLEH TETRAMETILAMONIUM (TMA)  
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ABSTRAK

Lempung termodifikasi TMA telah dibuat melalui beberapa tahap. Lempung alam dari Boyolali, Jawa Tengah diaduk bersama larutan NaCl 1M selama 24 jam sehingga diperoleh lempung-Na. Selanjutnya, lempung-Na dimasukkan dan diaduk dalam larutan TMACl dengan variasi konsentrasi  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$ , 2,  $2\frac{1}{2}$  % b/v selama 24 jam. Lempung yang dihasilkan dianalisis menggunakan metode difraksi sinar-X, kemudian diaplikasikan untuk pemucatan minyak kelapa sawit mentah. Pemucatan dilakukan dengan menambahkan 0,1 gram lempung-TMA kedalam 4 mL minyak kelapa sawit, campuran diaduk dan dipanaskan pada temperatur  $91^{\circ}\text{C}$  dengan variasi waktu kontak 5, 10, 15, 30, 45, 60, 90, 120, 150 menit. Daya pemucatan adsorben terhadap minyak ditentukan dengan metode spektrofotometri UV-Vis dan angka asam ditentukan dengan metode titrimetri. Komponen minyak kelapa sawit mentah yang teradsorpsi oleh lempung-TMA ditentukan dengan metode spektrofotometri Uv-Vis dan infra merah.

Dari hasil penelitian dapat disimpulkan bahwa lempung-TMA 1% b/v mempunyai daya pemucatan paling besar yakni 99,48% dengan waktu kontak pemucatan optimum 120 menit dan mampu menurunkan angka asam minyak sebesar 29,16%. Komponen yang teradsorpsi dalam lempung-TMA antara lain  $\beta$ -karoten, asam lemak, aldehyd (deka 2,4,6,8 tetraenal) dan keton.

Kata kunci: lempung, tetrametilamonium, pemucatan minyak kelapa sawit mentah

BLEACHING CRUDE PALM OIL USING TMA-MODIFIED CLAY

ABSTRACT

TMA-modified clay was made through several steps. First, the natural clay from Boyolali, Central Java was stirred with NaCl solution 1M for 24 hours and filtered. Next, the residues were soaked into TMACl solution and stirred with variation of concentration  $\frac{1}{2}$ . 1.  $1\frac{1}{2}$ . 2.  $2\frac{1}{2}$  % w/v for 24 hours. The product was characterized using X-ray diffraction method and then was applied in bleaching crude palm oil by soaking TMA-clay of 0.1 gram into 4 mL of palm oil, the mixture was stirred and heated until  $91^{\circ}\text{C}$  with the variation of contact times 5. 10. 15. 30. 45. 60. 75. 90. 120 and 150 minutes. The adsorbent bleaching capacity toward oil was determined by spectrofotometry method and the acid number was determined by titrimetry method. The components of crude palm oil adsorbed by TMA-clay were determined by UV-Vis and infra red spectrofotometry.

It was concluded that TMA-clay 1% w/v had the maximum bleaching efficiency that was 99.48% with optimum contact times 120 minutes and was able to decrease acid number until 29.16%. The components adsorbed by TMA-clay were as  $\beta$ -carotene, fatty acid, aldehyd (deca 2.4.6.8 tetraenal) and keton.

Key words: clay, tetramethylammonium, bleaching crude palm oil