

**ADSORPSI SURFAKTAN ANIONIK DODESIL BENZENA SULFONAT  
MENGGUNAKAN SERAT KAPUK (*Ceiba pentandra* L.)  
TERMODIFIKASI DODESENIL SUKSIAT**

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**INTISARI**

Penelitian tentang adsorpsi surfaktan anionik *Dodecylbenzene Sulfonate* (DBS) dengan adsorben selulosa pada serat kapuk termodifikasi dodesenil suksinat (SKDS) telah dilakukan. Penelitian ini bertujuan untuk memodifikasi dan mengkarakterisasi adsorben SKDS, menentukan kondisi optimum pH, massa adsorben, waktu kontak, dan konsentrasi adsorbat. Selulosa pada serat kapuk dipreparasi dengan pemutihan (*bleaching*) menggunakan natrium hipoklorit (NaOCl), kemudian dimodifikasi dengan dodesenil suksinat sebagai *modifying agent* menggunakan pelarut N,N-dimetilformamida (DMF), dan katalis piridin. Hasil sintesis dikarakterisasi menggunakan FTIR, XRD, dan SEM. Kajian adsorpsi DBS melibatkan variasi pH, massa adsorben, waktu kontak, dan konsentrasi adsorbat. Variasi waktu kontak untuk menentukan kinetika adsorpsi, sedangkan variasi konsentrasi awal DBS untuk menentukan isoterm adsorpsi.

Hasil penelitian menunjukkan bahwa modifikasi serat kapuk dengan dodesenil suksinat telah berhasil dilakukan. Interaksi optimum DBS dengan adsorben SKDS terjadi pada pH 4, massa adsorben 100 mg, waktu kontak 90 menit, dan konsentrasi 150 mg L<sup>-1</sup>. Adsorpsi DBS dengan adsorben SKDS mengikuti model kinetika orde dua semu dengan nilai konstanta laju adsorpsi sebesar 5,71×10<sup>-3</sup> g mg<sup>-1</sup> menit<sup>-1</sup> dan model isoterm adsorpsi DBS dengan adsorben SKDS mengikuti model Langmuir dengan kapasitas adsorpsi sebesar 74,07 mg g<sup>-1</sup>.

**Kata kunci:** adsorpsi, dodesenil suksinat, serat kapuk, surfaktan

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SULFONATE USING DODECENYL SUCCINATE MODIFIED KAPOK  
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**ABSTRACT**

Adsorption of anionic surfactant adsorbent dodecylbenzene sulfonate on dodecenyl succinic modified kapok fiber cellulose adsorbent (SKDS) has been conducted. This research aims to modify and characterize SKDS adsorbent to determine the optimum pH conditions, adsorbent mass, contact time, and initial concentration. Cellulose from kapok fiber was prepared by bleaching using sodium hypochlorite (NaOCl). A modification process was carried out with dodecenyl succinic as a modifying agent dissolved in N,N-dimethylformamide (DMF) solvent, and with pyridine as a catalyst. The synthesis results were characterized using FTIR, XRD, and SEM. Adsorption of DBS was carried out by varying the pH of the solution, adsorbent mass, contact time, and DBS initial concentration. Variation of contact time was used to determine the adsorption kinetics, while variation of DBS initial concentration was used to determine the adsorption isotherms.

The results showed that the modification of kapok fiber with dodecenyl succinic had been successfully carried out. The interaction of DBS with SKDS adsorbent was optimum at pH 4, 100 mg of adsorbent mass, 90 minutes contact time, and 150 mg L<sup>-1</sup> DBS concentration. The adsorption of DBS on SKDS adsorbent followed a pseudo-second-order kinetic model with an adsorption rate constant value of  $5.71 \times 10^{-3} \text{ g mg}^{-1} \text{ min}^{-1}$  and Langmuir isotherm with the maximum DBS adsorption capacity was 74.07 mg g<sup>-1</sup>.

**Keywords:** adsorption, dodecenyl succinic, kapok fiber, surfactant