

## Adsorpsi degradasi simultan linear alkylbenzene sulfonate las menggunakan karbon aktif jerami biofilm = Simultaneous adsorption degradation of linear alkylbenzene sulfonates las by activated carbons straw biofilm

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### Abstrak

[Linear alkylbenzene sulfonate (LAS) adalah surfaktan dalam deterjen yang bersifat toksik terhadap organisme akuatik dan menurut Kepmenkes RI No. 492/MENKES/PER/IV/2010 kadar maksimum surfaktan dalam air adalah sebesar 0,5 mg/L. Degradasi LAS dilakukan dengan adsorpsi yang disimultan dengan peranan biofilm dari bakteri *Acinetobacter baumannii* yang terbentuk di atas permukaan karbon aktif jerami. *Acinetobacter baumannii* terbukti dapat membentuk biofilm di atas karbon aktif jerami dalam nutrient broth (NB), hal ini dibuktikan dengan adanya EPS (Extracellular Polymer Substance) pada Uji SEM dan FTIR. Analisis penurunan konsentrasi LAS dilakukan dengan menggunakan teknik MBAS (methylene blue active substance). Pada penelitian ini dilakukan degradasi LAS dengan dua variasi yaitu pertama variasi konsentrasi LAS 10 ppm, 20 ppm dan 30 ppm serta kedua variasi massa karbon aktif jerami yaitu 60 g, 100 g dan 150 mg. Hasil percobaan menunjukkan bahwa degradasi dengan konsentrasi 20 ppm pada massa karbon 150 gram memberikan hasil persen degradasi yang lebih besar, mencapai 96% pada hari ke-4 diikuti oleh degradasi LAS dengan konsentrasi 10 ppm yang mencapai 95% dan terakhir konsentrasi 30 ppm mencapai 56,25%.

;Linear Alkylbenzene Sulfonates (LAS) one of a kind surfactants in detergents and which is toxic to aquatic organisms, and according to Kepmenkes RI No. 492/MENKES/PER/IV/2010 the maximum levels of surfactant in water are 0.5 mg/L. LAS degradation conducted by adsorption simultaneously with the role of bacteria *Acinetobacter baumannii* biofilms formed on the surface of activated carbons straw. *Acinetobacter baumannii* shown to form biofilms on activated carbon straw in nutrient broth (NB), proven by the EPS (Extracellular Polymer Substance) presence in SEM and FTIR test. Degradation Analysis of LAS concentration was conducted by MBAS (Methylene Blue Active Substance). This research conducted with two variations: first variation is LAS concentration there are 10 ppm, 20 ppm and 30 ppm, and a second variation of the mass of activated carbon straw which are 60 g, 100 g and 150 g. The results showed that the LAS degradation with concentration 20 ppm at 150 grams have percentage degradation higher, reached 96% on day 4 followed by 95% for 10 ppm and the last 30 ppm, that is 56,25%.

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