

Degradasi Pewarna Methylene Blue Menggunakan Powder TiO₂ Food-Grade di Bawah Sinar Matahari

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ABSTRAK

Tujuan dari penelitian ini adalah untuk mengetahui pengaruh material titanium dioksida (TiO₂) food-grade terhadap degradasi pewarna metilene blue (MB) di bawah sinar matahari. Massa material TiO₂ pada larutan MB divariasi untuk mengetahui berapa jumlah TiO₂ yang dibutuhkan. Hasil degradasi terbaik ditunjukkan oleh sampel dengan penggunaan TiO₂ sebanyak 5 g dengan waktu 2 jam. Dari data – data yang diperoleh juga didapatkan hasil bahwa sinar matahari tidak berpengaruh banyak terhadap proses degradasi MB dengan kata lain TiO₂ foodgrade tidak memiliki aktivitas fotokatalitik.

Kata kunci : TiO₂, foodgrade, methylene blue

ABSTRACT

The purpose of this research is to study the effect of food-grade TiO₂ on MB degradation under Sun light radiation. The mass of TiO₂ was varied to investigate the efficient number of TiO₂ needed. The best degradation result was shown by 5 g TiO₂ sample with time of 2 h. From collected data, we concluded that Sun light did not play important role in the MB degradation process. The food-grade TiO₂ did not show any photocatalytic activity.

Keywords: TiO₂, foodgrade, methylene blue

PENDAHULUAN

TiO₂ merupakan senyawa metal oksida berwarna putih yang tahan karat, tidak beracun dan merupakan salah satu katalis yang paling stabil, paling sering digunakan dibandingkan dengan katalis lainnya (Abdullah, 2011). Beberapa penelitian membuktikan bahwa TiO₂ yang berada dalam larutan tersuspensi merupakan katalis yang sangat efektif dan efisien digunakan dalam proses fotokatalitik. TiO₂ yang berukuran nano memiliki nilai rasio luas permukaan terhadap volume yang besar. Hal ini memungkinkan terjadinya pemisahan serta penangkapan muatan secara lebih efisien pada permukaan. Sehingga akan menaikkan jumlah cahaya yang terabsorpsi dan baik untuk sebuah proses degradasi (Timuda, 2010).

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