The Effect of Tio2 Loading on Nanocellulose (NC)/Tio2 Solid Composite and Ph on Paracetamol Photodegradation

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Abstract:

Nowadays, water pollution by organic pollutants from pharmaceutical industries is a continuous problem in the world. In this paper, the effects of TiO2 loading on the synthesis of NC/TiO2 solid composites (NCT) as photocatalyst and pH on photodegradation of paracetamol were studied. Nanocellulose is extracted from empty palm oil bunches (EPOB) by acid hydrolysis at low concentrations and NCT was successfully produced using the impregnation method as proven by SEM characterization. NCT with TiO2 loading of 70% on nanocellulose (NCT 30-70) as much as 1 g/L at pH 6 provides the best conditions for photodegradation of waste containing 15 ppm paracetamol with a concentration reduction of up to 60% for 4 hours. Reuse of photocatalyst shows that up to 4 cycles, the photocatalyst's ability is reduced by 13%.

Keywords:

NCT; pH, ratio; photodegradation; paracetamol.