

Oncheera Petchoy 2009: Decolorization of Reactive Dye Solution by White-Rot Fungus *Datronia* sp. KAPI0039. Master of Science (Environmental Science), Major Field: Environmental Science, College of Environment. Thesis Advisor: Assistant Professor Savaporn Supaphol, Ph.D. 90 pages.

This study focused on the color removal of two types of reactive dyes; Remazol Brilliant Blue R (RBBR) and Reactive Black 5 (RB5) by white-rot fungus *Datronia* sp. KAPI0039. The concentration of reactive dye (200, 400, 600, 800 and 1,000 mgL⁻¹), fungal inoculum size (1, 2, 3% (w/v)) as well as reaction pH (3, 5, 7, 9) were optimized within the reaction time 168 hours. Samples were periodically collected at 0, 2, 4, 6, 8, 12, 18, 24, 48, 72, 96, 120, 144 and 168 hours for the measurement of color unit, Laccase activity and Manganese Peroxidase (MnP) activity. The results showed that 2% (w/v) *Datronia* sp. KAPI0039 was most effective for the reduction of 1,000 mgL⁻¹ RBBR at pH 5 with %color removal at 96.05%. The highest laccase (195.45 UL⁻¹) and manganese peroxidase (38.27 UL⁻¹) activities were also detected in the optimal condition. For RB5, *Datronia* sp. KAPI0039 efficiently performed at 2% (w/v) fungal inoculum size for the reduction of 600 mgL⁻¹ RB5 under pH 5 with %decolorization 88.01 %. The highest laccase activities (123.69 UL⁻¹) was detected whereas an activity of manganese peroxidase was absent during this hour. The result, therefore, indicated that *Datronia* sp. KAPI0039 was obviously able to breakdown both reactive dyes and laccase was considered as a major lignin-degradation enzyme in this case.

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Thesis Advisor's signature

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