ISOLATION AND CHARACTERIZATION OF AN ACRYLAMIDE-DEGRADING *Burkholderia* sp. STRAIN DR.Y27

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ABSTRACT

Several local bacteria have been isolated from glyphosate-contaminated soils at various locations throughout Malaysia. Quantitative monitoring of acrylamide degradation was performed using High Performance Liquid Chromatography (HPLC) whilst bacterial growth was carried out by plate counting. The isolate was tentatively identified as *Burkholderia* sp. strain DR.Y27 based on carbon utilization profiles using Biolog GN plates and partial 16s rDNA molecular phylogeny. Highest growth was obtained at acrylamide concentrations of between 100 to 2000 mg L^{-1}. Complete degradation of 850 mg L^{-1} of acrylamide occurs after ten days of incubation with concomitant cell growth. The isolate grew optimally in between pH 6.0 and 8.0. The effect of incubation temperature on the growth of this isolate shows an optimum growth at 30°C. Glucose, lactose, maltose, fructose, mannitol, citric acid and sucrose at an initial concentration of 1.0% (w/v) supported growth with glucose being the best carbon source. Aliphatic amides such as 2-chloroacetamide, methacrylamide, nicotinamide, acrylamide, acetamide, propionamide and urea supported growth with increasing assimilative capability from 2-chloroacetamide to urea. The characteristics of this isolate suggest that it would be useful in the bioremediation of acrylamide.

Keywords: *isolation, characterization, acrylamide-degrading, Bacterium*

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 ISSN : 1978-628X