## Aerobic Batch Degradation of Cresol by Newly Isolated *Pseudomonas monteilii* Cr13

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Microorganisms have broad spectrum of applications varying from metabolite production to breakdown of complex carbon sources. Cresols are one such complex that has drawn attention due to its disposal in un-degraded or partially degraded form that enters into air, water and soil polluting the environment; its extremities extend to surrounding ecosystem and destroying the aquatic and human life forms. Cresol possesses special affection towards blood plasma leading to kidney, liver and heart disorders. Many have reported biological degradation of hazardous chemical using different organisms with fine degradation efficiency. The current investigation adds another strain *Pseudomonas monteilii* which was found to exhibit the potential to utilize cresol as its major carbon source for growth and proliferation. Further, the Cresol inhibitory concentration was checked by varying concentration from 100 to 1500 ppm. The remnant concentration over the time period was analyzed by aminoantipyrine assay. The strain was capable of >99% removal at neutral pH, 150 rpm and 30p C in 24h. The phylogeny of the strain was analyzed post 16S rRNA sequencing using in silico tools. The strain can be optimized for degrading higher cresol dose without compromising on the biodegradation efficiency.

Keywords: Cresol degrading bacteria, 16S rRNA Gene Sequencing, Pseudomonas monteilii.

The methylphenols are the aromatic organic compounds that have variable melting points decided by the surrounding temperatures. These methylphenols have various applications in manufacturing of pesticides, petroleum products, dyes and also in a few pharmaceutical products and are generally known as cresols<sup>1,2,3,4,5</sup>. Cresols are generally found dumped in regions with petroleum or dye dumping sites. They are severely toxic for humans if inhaled or ingested, even at a very low concentration that often leads to consequences varying from irritation of eyes, mouth, throat and skin, vomiting, liver and heart damage, paralysis,

coma and death<sup>1,6,7</sup>. In human, cresol finds more affinity towards the ligand binding protein, Human Serum Albumin (HSA). HSA contributes as carrier proteins for various steroids, fatty acids and helps in maintaining the antioxidants in the body. Cresol binds to albumin reducing the carrier profile of protein resulting in kidney and blood disorders <sup>8,9,10,11</sup>. It is not only toxic for human life but equally deleterious for the aquatic forms, thus, direct disposal in water, air and soil is strictly prohibited<sup>12,13,14</sup>.

The environment exposure to cresols has been observed in terms of petroleum leakage, sludge from dye, pharmaceutical or other industries using derivatives of cresols as raw material<sup>1</sup>. There have been a lot of investigation on degradation and sequestration of the hazardous compound, where

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