

Utilization and degradation of an ester-based synthetic lubricant by *Acinetobacter lwoffii*

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Abstract

An oil-degrading bacterium, *Acinetobacter lwoffii*, isolated by elective culture from the Medway estuary, utilized an ester-based synthetic lubricating oil EMKARATE DE 155 as sole carbon and energy source. Analysis of culture supernatants by gas chromatography showed the accumulation of a nondegradable metabolite 1,1,1 Tris (hydroxymethyl) propane in addition to two metabolizable fatty acids, octanoic and decanoic acids as products of the synthetic oil degradation. Esterase activities were subsequently demonstrated in oil and acetate-grown cells. The synthetic oil therefore appears to be partially biodegradable in the environment.

Keywords: biotransformation, lubricant, esterase, *Acinetobacter*

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