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STUDIES ON THE BIODEGRADATION OF FLUOROANILINES BY A SINGLE MICROORGANISM

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Aromatic amines are considered important environmental pollutants due to their toxic and recalcitrant properties. The widespread use of these compounds in the industry and agriculture has led to their release to soils and waters. Microbial degradation has been found to be the major mechanism to avoid the accumulation of these pollutants in the environment.

Literature studies on the biodegradation of halogenated anilines have mostly focused on chlorinated anilines and very little is known about utilization of fluorinated derivatives. This study focuses on the biodegradation of 2-, 3- and 4-fluoroaniline by a microbial strain (strain F11) identified as *Labrys portucalensis*. This microorganism has the capacity to degrade aerobically fluorobenzene as sole carbon and energy source. Non-induced cells and cells induced in fluorobenzene were used to examine the capacity of the degrading strain to metabolize the target compounds. Co-metabolic studies with fluorobenzene were also conducted. The experiments were run in batch mode at 25°C with constant shaking. Growth, depletion of the target compounds and fluoride release were monitored.

Strain F11 was capable to completely degrade 2-fluoroaniline. 3- and 4-fluoroaniline were degraded nearly to completion by F11 cultures induced with fluorobenzene and by cultures fed simultaneously with fluorobenzene. The fluoride liberation for those two fluorinated anilines occurred at different extents.