Biodegradation of food industrial wastes by *Rhodococcus sp.*

K. Laczi[1], Ágnes Kis[1,2], K.L. Kovács[1,2], G. Rákhely[1,2] and K. Perei[1]

[1] Department of Biotechnology, University of Szeged, Közép fasor 52. H-6726 Szeged, Hungary
[2] Institute of Biophysics, Biological Research Centre Hungarian Academy of Sciences, Temesvári krt. 62., H-6726 Szeged, Hungary
mail: perei@brc.hu

Industrial pollution represents one of the major problems for the world. Although, recent technologies tend to reduce the emission of hazardous substances; nevertheless environmental pollution still reaches high levels. There are many toxic compounds of industrial wastes which must be neutralized. Biological approaches using microorganisms to convert polluting materials are environmentally and economically sound tools for cleaning our environment.

Certain bacteria, such as rhodococci, are able to degrade a wide range of hazardous chemicals, e.g. aliphatic and aromatic hydrocarbons. In our laboratory, a *Rhodococcus sp.* strain was isolated from hydrocarbon polluted soil. It was successfully proven that the bacterium could efficiently decompose industrial hydrocarbons such as diesel oil and dead oil. Moreover, the strain could tolerate low temperature and certain salt concentrations therefore it might be applied in oil mineralization after marine catastrophes.

In addition to oil industrial emissions, unctuous materials of food industry could cause dramatic harm by blocking pipe systems and treatment of wastewaters. In spite of the importance of the problem, its handling is still not solved. There are several approaches for removal of unctuous wastes from wastewaters, but these methods must be still improved.

According to the beneficial properties of our strain in diesel oil degradation, it might be successfully used in the cleanup of food industrial wastewaters. In this study, our aim was to demonstrate the applicability of this strain in bioremediation of food industrial and municipal wastes.

Lard, pig and poultry fat and cooking oil were used as sole carbon sources in minimal medium. The substrate utilization was demonstrated by measuring substrate level in the medium, the respiration activity and CO_2 production of the *Rhodococcus sp.* The strain consumed the available oxygen and released remarkable amount of carbon dioxide within a week, which means the bacterium can oxidize these materials. In addition, measurements of substrate concentration coincide with these data. Consequently, this strain is a promising waste cleaner in both oil and food industrial as well as housekeeping applications.

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