

# *Biodegradation of three fungicides by Pseudomonas cepacia isolated from a soil in the north-eastern Algeria*

Ouahiba BORDJIBA[1], Abdelhakim BELAZE[1], Nabila MEKSEM[1], Ali TAHAR[1], Larbi BOUGHEDIRI[1] and Med Réda DJEBAR[2],

[1] Plant Biology and Environment Laboratory, department of Biology, BADJI Mokhtar University, Po. Box 12, 23000 Annaba Algeria

[2] Laboratory of cell toxicology, department of Biology, BADJI Mokhtar University, Po. Box 12, 23000 Annaba Algeria

**Email:** [ouahiba\\_bordjiba@yahoo.fr](mailto:ouahiba_bordjiba@yahoo.fr)

## **Abstract**

*Generally the molecules of pesticides in soils, rainfall and surface water are dangerous for the environment. Most of them are classified by the EU as priority pollutants. And the risk to the environment has led to a keen interest vis-à-vis bioremediation technologies.*

*Many pesticides are aromatic compounds that are derived from benzene or neighboring hydrocarbon rings. The opening of the benzene ring is a chemically difficult reaction that requires powerful reagents, it is striking that, conversely, and it is easily accomplished by microorganisms. That is why the use of microorganisms for biotransformation of environmental pollutants has become a concern of many researchers.*

*Therefore, our objective is to investigate the effect of three molecules of pesticides belonging to the family of benzimidazoles and imidazoles on the soil parameters and their biodegradation by bacterial microflora isolated from contaminated sites.*

*To do this, the soil physico - chemical and biological parameters were determined. Analyzes have focused on pH, humidity, nitrates, electrical conductivity, organic matter and bacterial microflora. The physico-chemical parameters were analyzed by standard methods according to the general guidelines for storage and handling. The identification of isolated and purified bacteria was performed by identification galleries API 20 E / NE. Biodegradation tests of three molecules of pesticides were conducted in batch culture in GS medium. After 5 days, the rates of biodegradation were evaluated by GPC.*

*The results show that there is soil pollution. The values of some parameters are below the prescribed standards, particularly organic matter and electrical conductivity. The removal rate of pesticide exceeds 50% for Benomyl and it is depending of the nature of the chemical studied.*

**Keywords:** *biodegradation, carbendazim, benomyl, fenapanil, soil, Pseudomonas cepacia.*