BIODEGRADATION OF cypermethrin PESTICIDE IN A BATCH REACTOR WITH *Pseudomonas putida* IMMOBILIZED

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Introduction. At the present time in the world are used daily huge quantities of many pesticides for the purpose of combating various pests and diseases. However, the inappropriate use of these substances puts at risk the health of plants, animals and the human population that is exposed in some way to these compounds xenobiotics.
That is why in recent years has been investigated the bioremediation mediated by microbial biofilms, which has been shown to be a safer alternative and efficient to the bioremediation with microorganisms in planktonic state, since the cells have a better chance of adaptation and survival.
The aim of the present study was to quantify the concentration of the pesticide cypermethrin, during the process of biodegradation, through the use of Pseudomonas putida biofilm in a aerobic type batch reactor, using as support material expanded perlite.

Methods. Pseudonomas putida was already been reseeded in agar McConkey, to later be inoculated in LB broth with expanded perlite ore for 5 days to form biofilms, after it was subjected to a drying at 35 °C for 24 hours.
The biofilms were used in a reactor type aerobic batch with constant stirring to 100 rpm at 25 ºC, ore containing minimal medium with 100 parts per million (ppm) of the pesticide cypermethrin, during a trial period of 15 days. Sampling was carried out a journal and the concentration of cypermethrin in the sample was measured using infrared spectroscopy UV and visible. In addition other parameters were analyzed, which were dissolved oxygen, pH and bacterial growth

Results. During the biodegradation process of the pesticide cypermethrin in bacteria able to degrade 90% of cypermethrin in a period of 10 days and a little over 92% for 15 days, whereas bacteria growth followed by the formation of biofilms in the expanded perlite which allows bacteria to remain active longer than if they were in planktonic form, also the mineral content of the perlite provides nutrients for the bacteria continue to maintain the viability

Conclusions. The results obtained in this study suggest that the aerobic reactor with immobilized biofilms of Pseudomonas putida in expanded perlite, may be used as a method for biological treatment of waste degradation cypermethrin, since bacteria present a good adaptation process.

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