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**Cultural filtrates of certain microbial isolates as an alternative to powdery mildew chemical control in cucumbers**

**Aly S. DERBALAH†,\* and Gaber A. ELKOT††**

**† *Pesticides Department, Faculty of Agriculture, Kafr-El-Shiekh***

***University, 33516 Egypt***

**†† *Agricultural Botany Department, Faculty of Agriculture, Kafr-El-***

***Shiekh University 33516 Egypt***

**ABSTRACT**

Powdery mildew caused by *Sphaerotheca fuliginea* (Schlecht. Ex Fr.) Poll. Is a major problem in cucumbers grown under greenhouse conditions. Culture filtrates of certain biocontrol agents (*Epicoccum nigrum* ES1*, Epicoccum minitan*s ES2*, Epicoccum* sp ES3, *Trichoderma harzianum* ES4, *Trichoderma viride* ES5 and *Bacillus pumilus* ES6) were evaluated alone and in combination with penconazole against powdery mildew in cucumbers. The results showed that most of the culture filtrates of the tested microbial isolates in combination with the fungicide were more effective against powdery mildew than the fungicide alone at the recommended concentration level. The antifungal activity of the tested culture filtrates against powdery mildew was due to the presence of known antifungal compounds identified by GC-MS analysis. The results revealed that culture filtrates can be regarded as an effective control method for powdery mildew in cucumbers



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**Fate of imidacloprid in soil and plant after application to cotton seeds**

Sherif E. El-Hamady a, R. Kubiak b, Aly S. Derbalah a,\*

a Pesticides Department, Faculty of Agriculture, Kafr El-Sheikh University, 33516 Kafr-El- Sheikh, Egypt b Ecology Department, SLFA, Neustadt/W

Abstract

This study aimed to investigate the persistence of imidacloprid in soil after application to cotton seeds and to obtain a complete picture on the mass balance of this compound in soil and cotton plants. The study was carried out as a pot culture experiment under laboratory conditions using a Gaucho formulation containing 14C-labeled imidacloprid. Three treatments of cotton seeds were made in sandy loamy soil: live seeds grown in autoclaved soil, dead seeds put in live soil and live seeds grown in live soil. Results showed that total 14C recoveries decreased by time ranging 93.8–96.2, 77.1–88.4 and 53.5–62.4% of the applied radioactivity at 7, 14, and 21 d after application, respectively. The reduction in the extracted 14C from soil coincided with the increase of non- extracted ones. Levels of bound 14C was always less in autoclaved soil than in live ones. Results revealed also that only 1.8–6.8% of the applied 14C was taken up by the plants and fluctuated within the test period. 14C levels were higher in plants grown in autoclaved soil than those in live ones and the radioactivity tended to accumulate on the edges of cotton leaves. Most of the radioactivity in the soil extracts was identified as unchanged 14C-imidacloprid. \_ 2007 Elsevier Ltd. All rights reserved.



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**Microbial detoxification of metalaxyl in aquatic system**

Ahmed H. Massoud1, Aly S. Derbalah1,\*, El-Sayed. B. Belal2

1. Pesticides Department, Faculty of Agriculture, Kafr El-Sheikh University. Kafr El-Sheikh 33516, Egypt.

E-mail: masoudahm@yahoo.com

2. Agriculture Microbiology, Agriculture Botany Department, Faculty of Agriculture, Kafr El- Sheikh University, Kafr El-Sheikh 33516, Egypt

Abstract

Four microorganisms, Pseudomonas sp. (ER2), Aspergillus niger (ER6), Cladosporium herbarum (ER4) and Penicilluim sp. (ER3), were isolated from cucumber leaves previously treated with metalaxyl using enrichment technique. These isolates were evaluated for detoxification of metalaxyl at the recommended dose level in aquatic system. The effect of pH and temperature on the growth ability of the tested isolates was also investigated by measuring the intracellular protein and mycelia dry weight for bacterial and fungal isolates,respectively. Moreover, the toxicity of metalaxyl after 28 d of treatment with the tested isolates was evaluated to confirm the complete

removal of any toxic materials (metalaxyl and its metabolites). The results showed that the optimum degree pH for the growth of metalaxyl degrading isolates (bacterial and fungal isolates) was 7. The temperature 30°C appeared

to be the optimum degree for the growth of either fungal or bacterial isolates. The results showed that Pseudomonas sp. (ER2) was the most effective isolate in metalaxyl degradation followed by Aspergillus niger (ER6), Cladosporium herbarum (ER4) and Penicilluim sp. (ER3), respectively. There is no toxicity of metalaxyl detected in the supernatant after 28 d of treatment with Pseudomonas sp. (ER2). The results suggest that bioremediation by Pseudomonas sp. (ER2) isolate was considered to be effective method for detoxification of metalaxyl in aqueous media.



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**Biodegradability of famoxadone by various microbial isolates in aquatic systems**

A.S.H. Derbalah, E.B. Belal and A.H. Massoud

Department, Faculty of Agriculture, Kafr El-Sheikh Univ., Kafr El-Sheikh

33516, Egypt. Tel. 204-7325-5831, fax 204-7323-2032, email aliderbalah@yahoo.com

Abstract

Bioremediation is defined as the process whereby organic wastes are biologically degraded under controlled conditions to an innocuous state, or to levels below concentration limits established by regulatory authorities. In this study, four microorganisms (Pseudomonas sp. (EB1), Aspergillus niger (EB2), Cladosporium herbarum (EB4) and Penicillium sp. (EB3) were isolated from cucumber leaves previously treated with famoxadone, using an enrichment technique. These isolates were evaluated for the detoxification of famoxadone at the concentration level of 100 μg mL–1 in an aquatic system. The effects of pH and temperature on the growth of the tested isolates were also investigated by measuring the intracellular protein and mycelial dry weight for bacterial and fungal isolates, respectively. Moreover, the toxicity of famoxadone after 28 days of treatment with the tested isolates was evaluated to confirm the removal of any toxic materials (i.e. famoxadone and its metabolites). The results showed that the optimum pH for the growth of famoxadone-degrading isolates (i.e. bacterial and fungal isolates) was pH 7. A temperature of 30°C appears to be optimal for the growth of either fungal or bacterial isolates. Isolates of Pseudomonas sp. (EB1) and Aspergillus niger (EB2), were the most effective isolates in famoxadone degradation, followed by isolates of Cladosporium herbarum (EB4) and Penicillium sp. (EB3), respectively. A slight toxicity of famoxadone against A. solani as a sensitive target was detected in the supernatant treated byPseudomonas sp. (EB1), Aspergillus niger (EB2) and Penicillium sp. (EB3) as compared with the control. The results suggest that bioremediation of famoxadone by Pseudomonas sp. (EB1), Aspergillus niger (EB2) and Penicillium sp. (EB3) is promising for the detoxification of famoxadone in aqueous media. Moreover, the tested microorganisms isolated from cucumber leaves may be able to significantly reduce the residue level of famoxadone in vegetable crops to below the maximum limit, especially under greenhouse conditions.