NEW BIOLOGICAL COMPOUND WITH APPLICATION IN PLANT PROTECTION

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SUMMARY

Beneficial plant rhizobacteria (PR) are associated with the surfaces of plant roots and may increase plant yield by mechanisms that impart improved mineral nutrient uptake, disease suppression, or phytohormone production (Bais et al, 2004). An important trait of PR is their ability to effectively colonize the rhizosphere and maintain a stable relationship with the surface of plant roots. PR may also interact with a variety of soil microorganisms that are normally present in the rhizosphere, in some cases acting as a biocontrol agent against pathogenic bacteria (Pinton et al., 2001). One beneficial rhizobacterium is Bacillus subtilis, which is ubiquitous in soil, can promote plant growth, protect against fungal pathogen attack and play a role in the degradation of organic polymers in the soil. The commercial biofungicide, Serenade, which contains a B. subtilis strain, is reported to be effective against a variety of pathogenic bacteria, including Erwina, Pseudomonas, and Xanthomonas strains (http://www.agraquest.com/). B. subtilis can produce a variety of antibacterial agents, including a broad spectrum of lipopeptides, such as surfactin, iturin and fengycin.

The aim of our research presented in this paper was to test in vivo biocontrol ability of our Bacillus stains on the phytopathogens Fusarium oxysporum and Alternaria spp. on tomatoes plants. Extraction of inhibitory compounds from the culture medium was performed according to the indications of Phae et al. Thin layer chromatography (TLC) was performed on silicagel plates using chloroform:methanol:ethanol:distilled water (70:30:35:15) and revealed by staining with 1% ninhydrin reagent in acetone in order to separate antifungal compounds. In vivo testing of antifungal potential of bacilli strains has been done by counting germinated tomato and pepper at every five days and respectively by measuring on tomato and pepper length. Bacteria cultures were applied to the soil by spaying. In the same way was applied fungal spore suspension. In the control pot the soil was sprayed with sterile distilled water.