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(54) Title: A NOVEL STRAIN OF *BACILLUS* FOR CONTROLLING PLANT DISEASES AND CORN ROOTWORM

(57) Abstract

The present invention relates to a novel antibiotic–producing and metabolite–producing *Bacillus subtilis* strain that exhibits insecticidal, antifungal and antibacterial activity. The supernatant of this novel strain contains effective insecticidal, antifungal and antibacterial agents. Also included in the invention is a solvent extractable, small molecular weight (< 10,000 daltons) corn rootworm–active metabolite produced in the supernatant. Also included in the invention are methods of protecting or treating plants from fungal and bacterial infections and corn rootworm infestations comprising the step of applying to the plant an effective amount of the antibiotic/metabolite–producing novel *Bacillus subtilis* strain, the antibiotic/metabolite produced by the novel *Bacillus subtilis* strain or a combination thereof, optionally further comprising another antiobiotic–producing bacterial s train and/or a chemical pesticide. The invention also includes methods of preventing or treating fungal and bacterial infections using whole broth cultures or supernatants obtained from cultures of the novel *Bacillus subtilis* strain alone or in combination with chemical pesticides and/or other biocontrol agents. The invention also includes novel antifungal and antibacterial compounds designated agrastatins and a novel combination comprising an A–type iturin, a plipastatin, a surfactin and an agrastatin. Methods of treating or protecting plants from fungal and bacterial infections and corn rootworm infestations comprising administering the novel agrastatins and the novel combination comprising an A–type iturin, a plipastatin, a surfactin and an agrastatin are provided.