

Annual Conference on

MICROBIAL PATHOGENESIS, INFECTIOUS DISEASE, ANTIMICROBIALS AND DRUG RESISTANCE

August 23-24, 2017 | Toronto, Canada

Taxonomic diversity of cucurbit seed associated endophytes

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Endophytes are potentially beneficial microbes that live inside plants and can be utilized as biofertilizers and biocontrol agents by promoting plant growth and/or suppressing phytopathogens. Few endophytes have previously been isolated from the cucurbit plant family which includes economically important crops including watermelon, cucumber, cantaloupe, pumpkin and squash. In the present study, 169 bacterial endophytes and 10 fungal endophytes were isolated from seeds of different varieties of diverse cucurbits; the most comprehensive characterization of endophytes from this plant family. 16S rDNA and internal transcribed spacers (ITS4 and ITS1F) fingerprinting were used to taxonomically classify the isolated bacteria and fungi, respectively. Phylogenetic analysis of bacterial isolates showed *Bacilli* was the most abundant class including six different bacterial families. The γ -proteobacteria and Actinobacteria were also represented

in four different families. *Bacillus* was the core microbiota that was conserved across tested cucurbits genera. Strains of the genus *Paenibacillus* were exclusively isolated from *Cucumis sativus L*, *Cucumis melo L* and *Cucurbita pepo L* var *pepo L*. Three different genera of lactic acid bacteria (LAB) were recovered from *C. sativus L*, *C. melo L*, *Citrullus lanatus* var. *lanatus* and *Cucurbita pepo L* var. *turbinata*. Our results suggest co-evolution of seed microbial consortia with their host plants. We now propose to test these novel endophytic microbial strains for their ability to suppress important fungal and bacterial pathogens of the cucurbit family.

Speaker Biography

Eman M Khalaf has completed her PhD from Pharmacy School, Mansoura University, Egypt. She is presently working as a Lecturer of Microbiology, Pharmacy School, Damanhour University, Egypt. She has spent two years as a Postdoctoral fellow in Raizada Lab (Beneficial Microbes Lab), University of Guelph, Canada.

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