

Title: Discovery of novel small molecules/ metabolites and/ or probiotic strains from plant ecosystem to control foodborne pathogens

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Abstract

The seed microbial community consists of both beneficial bacteria and fungi. Seed endophytes can assist plant cells by providing beneficial compounds and protecting the host organism from plant pathogens, by producing antimicrobial compounds. These biological compounds could be used in medicine, agriculture and even in the food industry. *Listeria monocytogenes* and *Cronobacter sakazakii* are both important foodborne pathogens. They can exist survive for long periods of time in low-moisture foods and can potentially grow in products such as reconstituted powdered infant formula and a wide variety of other RTE foods. The discovery of novel compounds from bacterial endophytes can also be very useful with regards to food applications such as packaging or coating treatment. We, therefore, hypothesized that bacterial endophytes from fruit seeds will produce antimicrobial compounds that can decrease or inhibit the growth of *L. monocytogenes* and/or *C. sakazakii*. Tropical fruits, collected from retail stores in Canada, were processed under sterile conditions. Seeds were collected and washed with peptone water. Consequently, bacterial endophyte libraries were constructed from these tropical fruit seeds. In addition, isolated bacterial endophytes were screened for their inhibitory activity against *L. monocytogenes* and *C. sakazakii* by using the growth inhibition test. The results demonstrated that some bacterial endophytes such as *Bacillus* spp. had antagonistic activity against *L. monocytogenes* and *C. sakazakii*. Future work will include gaining a further understanding of endophytes and their potential for controlling foodborne pathogens, so that we can develop bio-protective compounds against *L. monocytogenes* and *C. sakazakii*.