Kentucky Academy of Science Abstract

**Comparative Risk Evaluation of Commercially Available Organic and Conventional Fertilizers for Potential Bacterial Pathogens**

Over the last decade, sales of organic foods and produce have increased considerably. Though organic foods cost more to produce, consumers believe organically produced foods are safer and pathogen free. Simultaneously, within the last ten years, foodborne disease outbreaks from organic and conventionally grown produce have also increased significantly. Some of the outbreaks may be attributed to use of fertilizers on produce. The objectives of this study are to compare the risk potential of pathogens in commercially available conventional, natural, and organic fertilizers while also evaluating the antibiotic resistance of the acquired pathogens. Fertilizers were sampled categorized as conventional-fertilizers (n=8), natural- fertilizers that are not USDA organically certified but follow organic regulations (n=3), and certified organic- fertilizers (n=7). All samples were analyzed for the presence and enumeration of total Enterobacteriaceae, Coliform, Escherichia coli, and Listeria using Petrifilms and various selective media. Further, the antibiotic resistance of the isolates was assessed using Kirby Bauer Disk Diffusion technique. So far, potential pathogens have been identified in all three categories and the relative risks of potential pathogens per category of fertilizers along with their antibiotic resistance profiles are being analyzed. Being an ongoing study, DNA extraction, PCR Amplification, and gene detection will be the next steps.