The role of plant metabolites in sensitive analytical detection of food borne illness pathogens

Alan Olstein
Paradigm Diagnostics, Inc, USA

Produce pose a unique food safety challenge for the consuming public because a significant proportion of fruits and vegetables are consumed without cooking, a first line of defense against most of the major food borne pathogens, *Salmonella* sp., Enteropathogenic *E.coli* and *Listeria monocytogenes* (Lm). *Listeria monocytogenes* is a ubiquitous environmental pathogen, which is often associated with food borne illness. The organism is well adapted to surviving in a multitude of environmental niches and can grow under both physical and chemical stress. Recent produce recalls have been attributable to contamination with both *Salmonella* and Lm. Researchers at the FDA have shown that detection of *Salmonella* in leafy green vegetables is adversely affected by methods of isolation suggesting that plant metabolites may inhibit the growth of this pathogen in selective enrichment media. A group at the FDA’s Center for Food Safety has shown that certain flavonoid compounds are growth inhibitory in Rappaport-Vassilidis (RV) media, widely used for cultivation of *Salmonella*. Speculation has focused on the role of these antioxidants as potential efflux pump inhibitors, which would render the *Salmonella* more sensitive to the toxicity of selective agents in the RV media. These findings suggest more attention be paid to isolation methods of this pathogen from fruits and vegetables. Our research has focused on the role of plant antioxidants as potential efflux pump inhibitors in Lm. While many of the flavonoids exhibit significant growth inhibition towards *Salmonella* sp., Lm appears to be more resistant to inhibition by these compounds than *Salmonella* sp. Correlations of efflux pump inhibition by plant metabolites in Lm to growth effects will be discussed. The classes of plant metabolites present in fruits and vegetables might inform the type of risk assessment to be made with respect to particular fruit or vegetable and specific food borne pathogen.

olstein@comcast.net