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Defining Robustness of Pesticide and Mycotoxin Analysis in Cannabis Matrices

Presenter: Karl Oetjen, Ph.D., Senior Scientist, SCIEX

Abstract: Sample clean-up is an important step for high throughput LC-MS/MS analyses; the more contaminants removed during the clean-up step, the longer the LC-MS/MS will be able to maintain the necessary sensitivity. Unfortunately, the presence of high concentrations of cannabinoids, waxes, terpenes, and other secondary metabolites, represent a significant analytical challenge, as these compounds can interfere with the analysis of pesticides at the ng/g levels required by most United States and Canadian regulations. In this study, the robustness of the Triple Quad™ 6500+ system was challenged by injecting a cannabis flower extract 840 times with no system maintenance. The cannabis flower was spiked with a mixture of pesticides commonly required for compliance testing and the areas of these pesticides were then monitored over time, with and without internal standard correction. Two challenging compounds, acequinocyl and avermectin, were detected 40 and 10 times lower, respectively, than Oregon regulatory limits. Thus, the data from this study shows that the SCIEX Triple Quad 6500+ system, even after 840 cannabis samples without routine MS maintenance, was able to meet Oregon State regulatory limits.