A113 Development of a Field Method for the Identification of the Hallucinogenic Herb *Salvia Divinorum* Using ATR-FTIR

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After attending this presentation, attendees will have an increased understanding of the need for an in-field test for the identification of *Salvia divinorum*. They will also become familiar with the use of ATR-FTIR to identify *Salvia divinorum* in the field.

This presentation will impact the forensic science community by presenting a new method of identification of *Salvia divinorum* that can be used as a simple in-field presumptive test that does not require the extraction of salvinorin A prior to analysis.

Salvia divinorum is a hallucinogenic plant that is smoked or chewed as a substitute for marijuana. The short-lived "high" is a result of the chemical salvinorin A, which is a component of *Salvia divinorum* that has not been found in any other species. Currently, *Salvia divinorum* and/or salvinorin A is illegal in twenty-two states and is regulated in eight additional states. Several countries have also outlawed or regulated *Salvia divinorum* and/or salvinorin A. With the recent increase in regulation of Salvia divinorum across the country, there is a need for a quick and simple preliminary test for *Salvia divinorum* that can be used in the field.

Currently, *Salvia divinorum* is not identified in crime laboratories. Instead, salvinorin A, the active component, is extracted from the plant material and analyzed using gas chromatography/mass spectrometry and thin layer chromatography. However, no in-field tests have been identified to aid in the quick presumptive identification of *Salvia divinorum* or salvinorin A. Previous studies have shown that no color test can definitively identify *Salvia divinorum* or salvinorin A, and *Salvia divinorum* does not possess unique physical characteristics that can be used for identification like marijuana. While confirmatory tests are sufficient for identification once the seizure reaches the laboratory, the lack of a field test will result in either too many or too few samples being sent to the lab for analysis. Also, all techniques currently used for identification require an extraction step, thus identifying salvinorin A rather than *Salvia divinorum* itself. Developing an in-field presumptive test to aid in the identification of *Salvia divinorum* will allow law enforcement to determine if vegetation found in the field is possibly *Salvia divinorum*. ATR-FTIR is a simple technology that does not require any sample preparation. Within minutes, a trained law enforcement officer with a portable FTIR instrument can determine if vegetation could be *Salvia divinorum*. In the laboratory, FTIR spectroscopy would provide a category A confirmatory test for identification that would not require an extraction as currently used methods do.

This study addresses differences and similarities in the infrared spectra of *Salvia divinorum* and more than thirty other species of Salvia as well as common herbs that may be confused with *Salvia divinorum* and extract enhanced products of *Salvia divinorum*. Additionally, as part of the validation of this method, the top and bottom of the leaves were compared to determine if a difference is present that would affect the leaf's identification. Salvinorin A is also being analyzed to determine if FTIR spectroscopy can be used to identify the pure substance. Finally, a portable FTIR instrument is being used to ensure the results found are comparable with those obtained with a research grade bench ATR-FTIR spectrometer.

***Salvia Divinorum*, Plant Identification, ATR-FTIR**

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