

Centennial Honors College
Western Illinois University
Undergraduate Research Day 2012

Poster Presentation

Analysis of Methamphetamine by a Green HPLC-UV Method

David Giltzow, Samantha Fitzgerald, and Donna Herrera

Faculty Mentor: Tarab Ahmad
Chemistry

Methamphetamine (MP) is a synthetic stimulant drug of abuse. Methamphetamine is highly addictive because of its ability to produce feelings of euphoria. Methamphetamine can be used as a prescription medication. Illicit MP can appear in many forms, such as a crystalline solid or paste. It can also be sold as a less-pure powder. Methamphetamine is highly popular because of how easily it can be manufactured. Consequently, analysis of amphetamines has become of increased interest from a point of view of toxicology, occupational medicine and law enforcement. There are many analytical techniques that are used for the quantitation of amphetamine and methamphetamine in different real samples like spectroscopy, capillary electrophoresis, gas chromatography (GC) with mass spectrometric (MS) detection and High Performance Liquid Chromatography (HPLC) with diode array detector. The HPLC with diode array detector is the most rational and universal identification technique for forensic cases in which the GC MS is not affordable. This method however uses toxic volatile solvents that are damaging for the environment and humans. In the current research, we are investigating the potential use of room temperature ionic liquids as a replacement for the organic solvents. Room temperature Ionic liquids (RTILs) are nonvolatile, non flammable salts that are recyclable and they are considered as green solvents. They are used in liquid chromatography as mobile phase additives and as stationary phases. Their properties as green solvents for the HPLC analysis of drugs of abuse are not explored yet. Therefore we are developing a green method for the analysis of MP using these compounds.