Date: February 23, 2012

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Principal Investigator: Robert W. Welsh

Research title: An investigation into the chemical and psycho-physical/impairment properties of the synthetic cannabinoid commonly referred to as “K-2” or “Spice”.

Introduction: This was the second study into the effects of synthetic cannabinoids on human subjects. Our first study in July 2010 produced an enormous amount of data both in the realm of psycho-physical intoxication and pharmacokinetics and pharmacodynamics. Our second study in March of 2011 produced very similar results. The primary difference in the second study was the addition of Dr. Joe Ryan’s psychological tests in which distinct changes in anxiety and frustration were seen post-dose.

Methods: Pre-Dose: Subjects were evaluated by nursing staff prior to participation. Once evaluated, they were subjected to a drug evaluation examination. Following this drug evaluation they submitted blood, urine and saliva samples. After this Dr. Ryan administered a battery of psychological evaluation tests. Once these tests were completed the subjects were allowed to smoke (via water pipe) various samples of synthetic cannabinoids. Some subjects received only one chemical while others received a “cocktail” of up to three chemicals.

Post-Dose: Subjects were carefully observed by nursing staff, toxicologists, drug evaluators and MSC staff for changes in demeanor, emotion, psycho-physical intoxication or discomfort/distress. Vital signs were taken at about 30 minute intervals. Subjects were again put through the drug evaluation process, the psychological tests and submitted several blood, urine and saliva tests throughout the afternoon.

Data Analysis: Based on the blood/urine/saliva tests our toxicologist has been able to track the metabolizing of these chemicals in human subjects; something which has not been done prior to our studies (at least not in a controlled environment).

We were also able to build on the results of the first study and formulate a much stronger opinion as the similarities (and differences) in the psycho-physical impairment seen in marijuana (THC). We are convinced the psycho-physical behavior found in users of “spice” will be very similar (in not indistinguishable) to marijuana. However, we are also concerned to see a much higher probability in onset of anxiety, frustration, fear and discomfort in users who ingest these chemicals at high levels or recreationally.
Publications/Presentations: The hard (pharmacological data) has been presented in several conferences by Dr. Barry Logan our primary partner in this series of studies. [http://www.nmslab.com/about-webinars-presentations](http://www.nmslab.com/about-webinars-presentations)

I and my co-investigator (Tracey Durbin) have been presenting our findings in several venues electronic media, Adobe Presenter and conference presentations. Thus far we have presented in following States: Arkansas, Kentucky, Minnesota, Missouri, Montana, Rhode Island and Texas. We have scheduled presentations coming up in Tennessee, Iowa, California and possibly Washington.

We have also given interviews to:


I have just recently posted an Adobe Presenter presentation at [http://ucmconnect.ucmo.edu/p61768739/](http://ucmconnect.ucmo.edu/p61768739/) for public viewing. It was posted yesterday (Feb 22, 2012) and as of today it has been viewed over 130 times.

Use of Funds: OSP granted us $4,993.00 to complete this study. Of this we used only $2,968.59.

Future: We are moving toward a third study and have secured funding for it from NMS Laboratories in Willow Grove, PA.

Respectfully submitted: Robert W. Welsh, Program Manager Missouri Safety Center