



B73 The Development of a Novel Color Test for Improved Detection of Synthetic Cathinones

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After attending this presentation, attendees will better understand the development of a new color test for synthetic cathinones (aka “bath salts”) and the scope of the test with respect to future derivatizations.

This presentation will impact the forensic science community by introducing a more reliable, presumptive means of detecting synthetic cathinones in the field and laboratory.

Color tests have been used by criminalists for decades to provide a rapid, inexpensive means of determining if an unknown compound merits further investigation. Law enforcement officers rely upon commercially produced presumptive color tests to determine probable cause for arrest and subsequent substance identification by crime laboratory personnel and techniques. Following a positive field presumptive test, the evidence (a potential controlled substance) is sent to the crime laboratory for further processing. This involves an indicative test and finally a confirmatory test. Color tests may also be used by crime laboratory personnel as a presumptive test.

Designer and emergent illicit drugs have entered the market at a rapid pace in the past five years, and synthetic cathinones (bath salts) are one example of these drugs. Synthetic cathinones are beta-keto phenethylamine derivatives that produce pharmacological effects similar to the Schedule I substances such as cathinone, methcathinone, and 3,4- Methylenedioxymethamphetamine (MDMA). The parent cathinone structure is easily derivatized at any of four sites to generate analogues not yet regulated by state legislation or the **Drug Enforcement Administration** (DEA) Scheduled substance list. Unfortunately, the derivatization of the cathinone structure has resulted in presumptive color tests that are often not detecting new bath salts, are providing different colors for different cathinone derivatives, or require several vials of various component reagents to be effective. It stands to reason that a reliable color test for synthetic cathinones capable of operating with great sensitivity over a wide range of environmental conditions and packaged in two or fewer ampules would constitute a significant advancement in the field.

This research and development has produced a two-stage color test utilizing proprietary reagents WuCo 1 and WuCo 2 in sequence. These reagents utilize organic dyes containing groups such as a sulfonic acid along with organic solvents and buffers described in this presentation. Experiments conducted demonstrate that the reagents are well suited for deployment and use in the field by law enforcement as well as the bench top as a presumptive test. The two-stage color test provides a consistent yellow color in the organic layer, and there are no impediments to its use in the field in a two-ampule system. In addition, the 20 synthetic cathinones tested can be detected in amounts ranging from microgram quantities to more than 30 milligram per testing package. Furthermore, the reagents produce effective results in a wide variety of environmental conditions, including at temperatures from -3°C to 40°C. This presentation details the 100% effectiveness in presumptive indication of a variety of synthetic cathinones.

Bath Salts, Synthetic Cathinone, Color Test