



K18 The Effects of pH on the Oxidation of Ephedrine and Phenylpropanolamine Using Sodium Periodate

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The attendees will better understand the impact that pH may have on the oxidation of ephedrine and phenylpropanolamine using sodium periodate.

The use of sodium periodate to chemically oxidize common over the counter amphetamine like substances such as ephedrine, and phenylpropanolamine has become an accepted practice in forensic urine drug testing environments. However, very little information is available as to the effect that pH has on the efficiency of this oxidative procedure. The purpose of this study was to evaluate the potential of the production of amphetamine and methamphetamine in the presence of high concentrations (3,000,000 ng/ml) of ephedrine and phenylpropanolamine. A saturated sodium periodate solution and sodium hydroxide solution are added to the urine sample containing the drug and deuterated internal standards. The pH of this oxidation step is between 11 and 13. In this study, the sodium periodate was also adjusted to pH 4.4, 5.2, 9.1 and 9.3. Samples were extracted using solid phase technology, and derivatized with MBTFA to form the TFA derivative. GC/MS analysis was conducted using electron impact ionization using three ions for the native compound and two ions for the deuterated internal standard. A single point calibrator at 500 ng/ml was used to establish both qualitative and quantitative results. No amphetamine or methamphetamine was detected at any of the pH levels evaluated. This data suggests that the oxidation of ephedrine and phenylpropanolamine at levels as high as 3,000,000 ng/ml by sodium periodate is effective when the pH is between 4.4 and 13.

pH, Ephedrine, Phenylpropanolamine