## K31 Internet-Advertised Drug-Removal Products: Effects on Cocaine, Opiates, and Carboxy-THC in Hair

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The goal of this presentation is to show that products commonly advertised to remove drugs from hair only remove drugs from the surface of the hair samples. Various screening and extraction methods will be discussed.

This presentation will impact the forensic community and/or humanity by clarifying the methodologies required for reliable hair analysis.

Numerous products are advertised on Internet websites as being effective at removing drugs from hair. To test the effects of these products on results of analysis of hair for the presence of cocaine, opiates, and carboxy-THC, hair from a user of these drugs was treated with eight different products according to package instructions of the respective products. As a control, the hair was also treated with Prell shampoo. Following the Prell and experimental treatments, the hair was washed and analyzed for the presence of the drugs by routine procedures. Products tested included Bio-Cleanse™, Dr. Potter's Detoxifying Hair Mudd, All Drugs Follicle Cleanse, Totally Clean, Clear Choice, testPure All-In-One Cleansing Shampoo & Conditioner, AllClear Hair Purifying & Cleansing System. In addition, Nexxus Aloe Rid Shampoo and Clarifying Treatment were tested because, although they are not Internet products, there are websites claiming that use of these can remove drugs from hair. After Prell treatments, the washed hair contained an average of 152 (+ 27, S.D.) ng cocaine/10 mg hair, 12.5 (+ 2.5 ng, S.D.) morphine/10 mg hair, and 3.9 (average of duplicates) pg carboxy-THC/10 mg hair. After application of the various "removal" products, the results were essentially the same as the Prell results: 108 –177 ng cocaine/10 mg hair; 8.3 – 14.8 ng morphine/10 mg hair; and 2.6 – 4.4 pg carboxy-THC/10 mg hair. These products were thus shown to be ineffective, essentially equivalent to normal shampooing, at removing that drug in hair that is resistant to removal by effective laboratory washing.

However, for methods that do not extract the hair sample's full drug content for analysis, the products would require testing under the actual extraction conditions. It is known from a study performed in Psychemedics laboratory of cocaine users, for example, that contamination of users' hair samples with cocaine ranged from almost none to 20 times the amount of the hair content after washing. Therefore, screening methods that only partially extract the drug from the hair prior to analysis may not detect a positive sample that has been well cleansed of surface contamination by a cosmetic product. In such cases, the effects of various hair care and drug removal products should be tested under the conditions in use to detect positives.

**Hair Analysis, Cocaine Opiates C-THC, Cosmetics Treatments**

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