



Criminalistics Section – 2005

B106 Development of Multiplexed Microsatellite Markers in *Cannabis sativa*

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Attendees will learn that there is a genetic test to provide evidence of cooperation in the production of cannabis.

The association of cannabis to sellers, growers and buyers could track networks and show common origin. This presentation will impact the forensic community and/or humanity by broadening the scope of the DNA analyst and give a genetic test to drug chemists.

Cannabis sativa L. (marijuana) is the most frequently used illegal drug in the United States. The marijuana plant can be easily identified through morphological examination and chemical analysis; however there is a need for a method to track distribution networks and to compare plants to determine a common source of origin. A genetic test can enable this association and provide evidence of cooperation in production. Microsatellite markers have distinct advantages over other genetic methods. They have multiple alleles at a single locus, they are reproducible between laboratories, they have a high discrimination power and they can be multiplexed. In this project, a set of *Cannabis* STR primers previously described by the group and a set of STR primers previously described by Gilmore's group in Australia were combined and multiplexed into two reactions. The primers include nine trinucleotides, one compound trinucleotide and one imperfect trinucleotide. Both hemp (low THC) plants and marijuana (high THC) plants from different regions of the United States and multiple countries will be tested with the multiplexed primers. The previous studies using these microsatellite markers were able to distinguish clones from non-clones. Efforts are underway to construct a comprehensive genomic map of *Cannabis sativa*, where the positions of these microsatellite loci on various chromosomes/linkage groups could be defined.

The goal of this project is to determine the level of polymorphism, to show the usefulness for DNA fingerprinting and to measure the genetic relationships between different *Cannabis* plants, all using a practical set of reactions that can be performed in an operational forensic laboratory.

Cannabis Sativa, Multiplexed Microsatellites, STR Primers