



D88 A Comparative Study of the Effect of Four Loko™ Alcoholic Beverages and Other Alcoholic Beverages on Inexperienced Drinkers

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After attending this presentation, attendees will be familiar with the effects of Four Loko™ alcoholic beverage compared to another alcoholic beverage and gain a better understanding of alcohol amounts necessary to become substantially incapacitated.

This presentation will impact the forensic science community by studying the ability of law enforcement and prosecutorial personnel to successfully investigate and prosecute offenses in which incapacitation by alcohol is a factor.

A local law enforcement agency in rural Missouri initiated an investigation in which a 14-year-old minor female was given Four Loko™ alcoholic beverages, restrained, and orally sodomized. Law enforcement raised the question "Does the Four Loko™ alcoholic beverage affect an inexperienced drinker more than other non-carbonated alcoholic beverages?" Published literature failed to give any definitive insight.

Four Loko™ alcoholic beverages were originally marketed as caffeinated alcoholic malt beverages. Published reports indicate that Four Loko™ no longer contains caffeine, taurine, or guarana. Despite this published literature, Four Loko™ continues to maintain its status among youth as an "energy alcohol." Published research indicates that the effect of Four Loko™ may be due to the delivery system (fruit-flavored carbonation) combined with the alcohol content (12% Alcohol By Volume (ABV)). No published research comparing delivery systems could be located.

This study analyzed both the chemical and behavioral effects on six volunteer test subjects. The volunteers participated in two controlled "wet labs." The labs compared Four Loko™ to vodka and orange juice (commonly referred to as a "screwdriver"), in equal ABV volumes, under similar time constraints. Phase one of the study involved Four Loko™ ingestion while the second involved ingestion of "screwdrivers."

During phase one, subjects were asked to consume one can of Four Loko™ within a 45-minute period. The can was administered in 8-ounce glasses, 15 minutes apart. Intoxication levels were recorded via industry accepted standardized field sobriety tests, breathalyzer tests, vital sign collection, and chemical analysis of blood drawn from the subjects. The test was repeated for a second can. No subject consumed more than two cans. Test subjects were monitored and tested for approximately six hours.

The second, or screwdriver ingestion phase, was conducted one month later and was administered in the same manner as the first phase.

The results of the experiment revealed that intoxication levels were, not surprisingly, similar in equal ABV amounts. The intoxication levels of the test subjects ranged (at peak levels) from .14 to .177. Variation was directly attributable to body habitus. The more telling results were discovered in the social results.

During the Four Loko™ phase, all six test subjects were giggly, happy, and sexually flirtatious. During the first phase, only one of the six test subjects was unable to complete the full battery of testing. This test subject was the most inexperienced drinker of the six test subjects. All six subjects were legally intoxicated after consuming one can of Four Loko™. After ingestion of 1.5 cans (approximately 34-ounces) all six were considered substantially incapacitated.

The social results of second phase were polar opposite of the Four Loko™ phase. Three of six subjects were rendered nearly unconscious after ingestion of approximately 35-ounces of vodka and orange juice (the same volume of liquid as the first phase). Within two hours of ingesting the "screwdrivers" no test subjects were giggly, happy, or flirtatious. The test subject's reactions from screwdrivers were that of a strong desire to lay down and go to sleep, only waking to be administered field sobriety or chemical testing.

The conclusions from this very limited study indicate that while chemically Four Loko™ provides a similar blood or breath alcohol level as other intoxicants in similar ABV concentrations, the social aspects of Four Loko™ make this a product worthy of additional controlled study.

Substantial Incapacity, Four Loko™, Blood Alcohol Concentration