Measuring the Effects of THC on Human Sperm Parameters Using Biomonitoring Analysis

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Introduction

- Marijuana usage is very common with about 40-50% of US adults having used it at least once.
- Effects of tetrahydrocannabinol (THC) on the brain is well known but few studies have evaluated its effects on the male reproductive system.
- Cannabinoids such as THC bind to cannabinoid receptors and have been associated with low sperm concentration and sperm count.

Methods

- Participants recruited for The Men’s Health Study in clinics at the GW Medical Faculty Associates and in the DC community provided urine and semen samples and completed a comprehensive questionnaire that included medical history and cannabis usage.
- Semen analysis was completed at GW SPH labs according to WHO 2010 standards.
- Urine samples were evaluated at University of Utah for COOH-THC, using gas chromatography-mass spectrometry (GC-MS/MS).

Results

- Table 1: Demographics of Participants in the THC Study
- Table 2: Urine COOH-THC Results
- Table 3: Self-Reported Cannabis Use vs. THC Biomonitoring
- Table 4: Comparison of Participants With and Without THC Urine Detection
- Table 5: Comparison of Parameters Below Normal WHO Standards

Conclusions

- Mean Sperm concentration was lower in men who had detectable THC in their urine.
- THC users were more likely to be cigarette smokers.
- Self-report was found to be an unreliable information source. Many participants with THC in urine reported not using cannabis; this indicates biomonitoring is important for THC studies.
- Future studies should include larger samples to study dose response relationships, and repeated measures to evaluate changes in associations between THC and sperm parameters over time.

References


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