

## Increased Severity of Neuropsychiatric Outcomes with Acute Synthetic Cannabinoid Toxicity as Compared to Marijuana in Adolescents Presenting to Emergency Departments

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### Background:

According to the Substance Abuse and Mental Health Administration, 59% of emergency department (ED) visits due to synthetic cannabinoid receptor agonists (SCRA) occur amongst adolescents, ages 12-20. Due to its neurological and psychiatric effects, new data supports that young adults are also more likely to seek treatment for acute SCRA toxicity. Little data exist to provide insight into the neuropsychiatric presentation of SCRA toxicity in adolescents.

**Research Question:** To characterize the neuropsychiatric presentation of adolescents presenting to the ED following SCRA use as compared to marijuana (MJ) use.

### Design/Methods:

We conducted a retrospective study on adolescents 10-19 years who presented to the ED for an SCRA or MJ toxicity that was reported to the national Toxicology Investigators Consortium (ToxIC) Registry (2010-15). Included patients had self-reported SCRA and MJ acute exposures and were evaluated by medical toxicology consultation at >50 participating Registry hospital centers. Relative risk analysis was conducted on the neuropsychiatric symptoms and signs reported in the following clinical subgroups: SCRA-single exposures, SCRA poly drug exposures-excluding MJ, MJ-single exposure and MJ-poly drug exposures-excluding SCRA.

### Results:

Adolescents presenting to the ED with single-drug use of SCRA had higher rates of coma/CNS depression (RR: 2.48, 95%CI: 1.05-5.96, p=0.039) and seizures (RR: 3.91, 95%CI: 1.18-12.95, p=0.026) as compared to single-drug MJ users. Any SCRA exposure (single or poly use) is associated with a higher rate of seizures compared to any MJ exposure (see table). Single-drug SCRA exposures had a reduced rate of agitation as compared to single-drug MJ exposures (RR: 0.23, 95%CI: 0.14-0.36, p<0.0001). However, the opposite is seen in poly-drug users of SCRA compared to poly-drug MJ users with an increased rate of agitation (RR: 2.85 95% CI: 1.6255-5.0013 p=0.0003).

### Discussion:

This study is the first to analyze the neuropsychiatric outcomes of a large cohort of US adolescents with SCRA toxicity. Limitations include lack of confirmatory testing and failure to capture timing of ingestion.

### Conclusions:

More severe neuropsychiatric sequelae were associated with SCRA exposures in adolescents as compared to MJ.