

Tourette Syndrome

Tourette syndrome (TS) is a complex neuropsychiatric disorder, of unknown etiology, that is characterized by involuntary vocal tics. Severity of this condition varies widely among patients. Though there is no cure for Tourette syndrome, the condition often improves with age. Experts estimate that 100,000 Americans are afflicted with TS.

A review of the scientific literature reveals a limited number of case reports and human studies specific to the use of cannabinoids for the treatment of TS. One of the first studies documenting the efficacy of THC appears in the *American Journal of Psychiatry* in 1999. Investigators at Germany's Medical School of Hanover, Department of Clinical Psychiatry and Psychotherapy reported successful treatment of Tourette syndrome with a single dose of 10 mg of delta-9-THC in a 25-year-old male patient in an uncontrolled open clinical trial.¹ Investigators reported that the subject's total tic severity score fell from 41 to 7 within two hours following cannabinoid therapy, and that improvement was observed for a total of seven hours. "For the first time, patients' subjective experiences when smoking marijuana were confirmed by using a valid and reliable rating scale," the authors concluded.

Investigators confirmed this initial finding in 2002 in a randomized, double-blind, placebo-controlled, crossover, single dose trial of THC in 12 adult TS patients. Researchers reported a "significant improvement of tics and obsessive-compulsive behavior (OCB) after treatment with delta-9-THC compared to placebo."² Investigators reported no cognitive impairment in subjects following THC administration³ and concluded, "THC is effective and safe in treating tics and OCB in TS."⁴

Investigators in 2003 conducted a follow-up randomized, double-blind, placebo-controlled trial involving 24 patients to whom daily doses of up to 10 mg of THC were administered over a six-week period. Researchers reported that subjects experienced a significant reduction in tics following long-term cannabinoid treatment,⁵ and suffered no detrimental effects to learning, recall, or verbal memory.⁶ A trend toward significant improvement of verbal memory span during and after therapy was also observed.

A 2003 review of the available data at that time, published in the journal *Expert Opinions in Pharmacotherapy*, reported that in adult TS patients, "Therapy with delta-9-THC should be tried ... if well-established drugs either fail to improve tics or cause significant adverse effects."⁷ A 2013 scientific review similarly concluded: "[By] many experts THC is recommended for the treatment of TS in adult patients, when first line treatments failed to improve the tics. In treatment-resistant adult patients, therefore, treatment with THC should be taken into consideration."⁸

A 2016 case study reported that the twice daily administration of cannabinoid extracts in a patient with treatment-resistant TS was associated with an 85 percent reduction in the subject's motor tics and a 90 percent reduction in vocal tics. Authors concluded, "Our results support previous research suggesting that cannabinoids are a safe and effective treatment for TS and should be considered in treatment-resistant cases."⁹ Another recent pair of case reports acknowledged that daily administration of cannabis-based therapy "provided significant symptom improvement" in patients with treatment resistant TS.¹⁰

In 2017, University of Toronto investigators retrospectively assessed the safety and efficacy of inhaled cannabis in 19 patients with TS. Researchers reported, "All study participants experienced clinically significant symptom relief," including reductions in obsessive-compulsive symptoms, impulsivity, anxiety, irritability, and rage outbursts. Eighteen of the 19 patients experienced decreased tic severity. Cannabis

was “generally well tolerated” by study subjects. They concluded: “Overall, these study participants experienced substantial improvements in their symptoms. This is particularly striking given that almost all participants had failed at least one anti-tic medication trial. ... In conclusion, cannabis seems to be a promising treatment option for tics and associated symptoms.”¹¹

As medical cannabis becomes more popular worldwide, increasing numbers of TS patients are turning to cannabis and reporting subjective benefits from its use. In a recent investigation of Israeli TS patients, most reported gaining relief from the use of cannabis.¹² More recently, investigators surveyed 98 TS patients who had prior cannabis experience. Eighty-five percent of the survey’s respondents said that cannabis mitigated their symptoms and 93 percent reported that it improved their quality of life. Investigators concluded, “From our results, it is further supported that CBM (cannabis-based medicines) might be effective and safe in the treatment of tics and comorbidities at least in a subgroup of adult patients with GTS.”¹³

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