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Kratom

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Kratom (mitragyna speciosa korth) is a tree that originates in southeast Asia. It belongs to the same family as the coffee tree.[1] The plant material contains the opioid-like mitragynine and 7-hydroxymitragynine. Mitraphylline, which is also a major component of kratom, is being researched for its ability to inhibit cell growth and induce cytotoxicity.

In Thailand, kratom is used by the native population as both a stimulant and an opium substitute (depending on the dose), and to relieve the discomfort of opioid withdrawal. In some provinces, its use is considered as normal as drinking coffee, with up to 70% of the male population using it. In 1943 the Thai government passed legislation banning the cultivation of the kratom tree, and in 1979 they classified kratom with cannabis and hallucinogenic mushrooms, among the least regulated and punished drug offenses. However, in the last decade the traffic and use of kratom in Thailand has soared and the Thai government has sometimes discovered unwanted adulterants to the plant material such as powdered mosquito coils containing insecticides. [2]

In recent years, the use of kratom has also skyrocketed in the United States. It is available in the United States in many forms, including dried/crushed leaves, powder, capsules, tablets, liquids, and gum/resin. The most common route of administration is ingestion as a brewed tea, although smoking, chewing the raw leaves, and the ingestion of extracts have also been reported.[3] According to the U.S. Center for Disease Control, over 40% of medical cases involving kratom were non-life threatening and required some form of treatment, while approximately 7% were considered major and life-threatening. In 2016, the DEA seized more kratom than ever before and U.S. poison control center calls concerning kratom have increased tenfold from 2010 to 2015.[4] In early 2018, kratom was responsible for 199 cases of salmonella across 41 states.[5]

Low doses (10-50 mg) of kratom produce mainly stimulant effects – contracted pupils, anxiety, agitation, itching, nausea and loss of appetite. Higher doses (50-150 mg) produce opioid-like effects in addition to possible adverse effects such as tachycardia, constipation, dizziness, nausea, hypotension and sweating. Serious toxicity generally only appears at high doses and in combination with other substances. Effects on respiratory depression, a common concern with opioid use, lacks sufficient investigation in the literature.[6] If frequent users of kratom cease using the substance, they will suffer withdrawal symptoms such as irritability, feelings of distress, nausea, hypertension, insomnia, a runny nose, muscle and joint pain, and diarrhea.

The mitragynine derived from the plant material is not a very potent opioid, but the concentrations available from the kratom plant may generate a high enough dose to overcome that insufficiency. Mitragynine has about 0.01 times the potency of morphine for the μ-opioid receptor (MOR), whereas the oxidized form of mitragynine (7-hydroxymitragynine) has ten times that potency. During the growth and storage stage, optimal sunlight and oxidizing conditions can convert half of the mitragynine to 7-hydroxymitragynine. Previous research on the behavior of mitragynine alkaloids reveals that binding to the MOR does not result in the undesirable opioid side effects of constipation, respiratory depression and the development of tolerance.

Alabama, Arkansas, Indiana, Tennessee, Vermont, Wisconsin and the District of Columbia have banned kratom, along with at least three cities — Denver, San Diego and Sarasota. Legislation was considered in 2016 in at least six other states — Florida, Kentucky, New Hampshire, New Jersey, New York and North Carolina.[7] The U.S. Food and Drug Administration (FDA) has blocked imports of kratom since 2015 but the U.S. Drug Enforcement Administration (DEA) aborted an attempt to schedule it as a Schedule I drug (i.e. of no redeeming medical value) after a public backlash in 2016 and said they would wait for a formal recommendation from the FDA. The U.S. Department of Health and Human Services (HHS) has recommended that mitragynine and 7-hydroxymitragynine be put on Schedule I in 2017.[8]

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