

# Kratom (*Mitragyna speciosa*)

The powerful indigenous tree of Thailand

Kratom is traditionally used only in Thailand, although some use in Malaysia has been reported. Besides kratom, it also goes by the names *ithang*, *kakuam*, and in southern regions; *thom*. Use dates far enough back that its beginning can't be determined. It is often used as a substitute for opium when opium is unavailable, or to moderate opium addiction. In folk medicine, it is often used to treat diarrhea. A small minority of users use kratom to prolong sexual intercourse.

Users describe different types of kratom, two main kinds being distinguished by the color of veins in the leaf - red or green/white. The green/white-veined variety is supposed to have a stronger effect. One study which surveyed Thai kratom users found that most users preferred a mixture of both, followed by red-veined alone and then white-veined alone.

Users of kratom tend to be peasants, laborers, and farmers who use the plant to overcome the burdens of their hard work and meager existences. Female users are apparently quite rare. Age of usage onset seems to be higher than for other drugs. Some studies have found no addiction problems in villagers using kratom, while others apparently have. It seems likely that if used in doses high enough for mu receptor crossover, addiction is a strong possibility. Heavy users may chew kratom between 3 and 10 times a day. While new users may only need a few leaves to obtain the desired effects, some users find with time they need to increase doses to 10-30 leaves or even more per day.



In some parts of the country, it was said that parents would choose to give their daughters in marriage to men who used kratom rather than men who used marijuana. The belief is that kratom users are hard working, while marijuana users are lazy. This belief is also maintained by many of the users themselves, who report beginning use because of a desire to work more efficiently, and who say using the drug gives them a strong desire to do work.

The Thai government passed the Kratom Act 2486 which went into effect on August 3, 1943. This law makes planting the tree illegal and requires existing trees to be cut down. This law was not found effective, since the tree is indigenous to the country. Today, kratom is classed in the same enforcement group as cocaine and heroin by Thai law, and has the same penalties. One ounce of extract is punishable by death. As with prohibition laws elsewhere in the world, this has succeeded only at increasing black market prices. A related species, *Mitragyna javanica*, is often used as a substitute to get around the law, but it is not considered as effective. The dominant alkaloid in this species is mitrajavine, which has not yet been pharmacologically tested.

Inspired by traditional use, H. Ridley reported in 1897 that the leaves of *Mitragyna speciosa* were a cure for opium addiction. In more recent times, mitragynine has been used in New Zealand for methadone addiction detox. Kratom was smoked whenever the patient experienced withdrawal symptoms, over a 6 week treatment period. Patients reported a visualization effect taking place at night in the form of vivid hypnagogic dreams. While working on plans for ibogaine experiments in the USA, Cures Not Wars activist Dana Beal suggested that mitragynine could be used as an active placebo for comparison in the study. Acting Deputy Director of the NIDA Charles Grudzinskas rejected the proposal, however, saying that even less was known about mitragynine than ibogaine.

Although chemically similar, ibogaine and mitragynine work by different pathways, and have different applications in treatment of narcotic addiction. While ibogaine is intended as a one time treatment to cure addiction, mitragynine is used to gradually wean the user off narcotics. The fact that mitragynine's  $\mu$  crossover is increased by the presence of opiate drugs may be exploitable in the treatment of narcotics addiction, because it directs binding to where it is needed, automatically regulating the attachment ratio and modulating it towards the delta receptors over a short time. Within a few days, the addict would stop use of the narcotic they are addicted to, and the cravings and withdrawal will be moderated by the binding of mitragynine to the delta receptors. Mitragynine could also perhaps be used as a maintenance drug for addicts not wishing to quit but trying to moderate an out of hand addiction.

In 1999, Pennapa Sapcharoen, director of the National Institute of Thai Traditional Medicine in Bangkok said that kratom could be prescribed both to opiate addicts and to patients suffering from depression, but stressed that further research is needed. Chulalongkorn University chemists have isolated mitragynine which researchers can obtain for study.

Over 25 alkaloids have been isolated from kratom. The most abundant alkaloids consist of three indoles and two oxindoles. The three indoles are mitragynine, paynanthine, and speciogynine - the first two of which appear to be unique to this species. The two oxindoles are mitraphylline and speciofoline. Other alkaloids present include other indoles, and oxindoles such as ajmalicine, corynanthedine, mitraversine, rhychophylline, and stipulatine.

Mitragynine is the dominant alkaloid in the plant. It was first isolated in 1907 by D. Hooper, a process repeated in 1921 by E. Field who gave the alkaloid its name. Its structure was first fully determined in 1964 by D. Zacharias, R. Rosenstein and E. Jeffrey. It is structurally related to both the yohimbe alkaloids and voacangine. It is more distantly related to other tryptamine-based psychedelic drugs such as psilocybin or LSD. Chemically, mitragynine is 9-methoxy-corynantheidine. Physically the compound is a white, amorphous powder with a melting point of 102-106 degrees and a boiling point of 230-240 degrees. It is soluble in alcohol, chloroform and acetic acid. The hydrochloride salt has a melting point of 243 degrees.

The alkaloid content of the leaves of *Mitragyna speciosa* is about 0.5%, about half of which is mitragynine. An average leaf weighs about 1.7 grams fresh or 0.43 grams dried. Twenty leaves contain approximately 17mg of mitragynine. All leaves appear to contain mitragynine, speciogynine, paynanthine, and small quantities of speciociliatine. Oxindole alkaloids usually occur only in small or trace amounts.

Use of this plant can be addictive if taken in high doses, and even though the main alkaloids in kratom are structurally related to psychedelics, there appears to be no psychedelic activity. It is legal everywhere except Thailand where possession is punishable by death.

**TRADITIONAL PREPARATION:** There is no recorded shamanistic use of this plant. Nearly all kratom users chew fresh leaves. New users usually consume as few as 3 leaves, where experienced users may consume around 20 leaves, sometimes 2-3 times a day. When preparing fresh leaf, the vein is extracted and sometimes salt is then added to prevent constipation. Consumption of the leaf is usually followed by drinking something hot, such as warm water or coffee. Leaves can also be smoked, made into a tea, or a crude resin extraction can be made. This resin extract is made by preparing a water extract of the leaves, boiling them down to a thick tar-like consistency, and then shaping it into small balls which are rolled in a material such as flour. They can be stored for several weeks until use, and this is apparently a quite popular method of consumption. 20 leaves contain about 17mg of mitragynine, the average "dose" for an experienced user.