

NPS Snapshot:

Kratom-Derived Semi-Synthetic Opioids

HISTORY AND BACKGROUND

A growing wave of consumer products labeled as 'kratom', '7-hydroxy mitragynine', or '7-OH'—which contain potent semi-synthetic opioids—marks the emergence of a new class of kratom-derived NPS.

Kratom & Mitragynine: A Natural Origin

Kratom (*Mitragyna speciosa*) is a tree native to Southeast Asia, where its crushed or powdered leaves have been consumed since the 19th century. It has stimulant- to opioid-like effects which are largely dose-dependent. Its primary alkaloid, mitragynine, has psychoactive properties including activity at the opioid receptor, while its metabolite, 7-hydroxy mitragynine, has μ -opioid activity far exceeding that of morphine.

Synthetic & Medicinal Efforts: Expanding the Scaffold

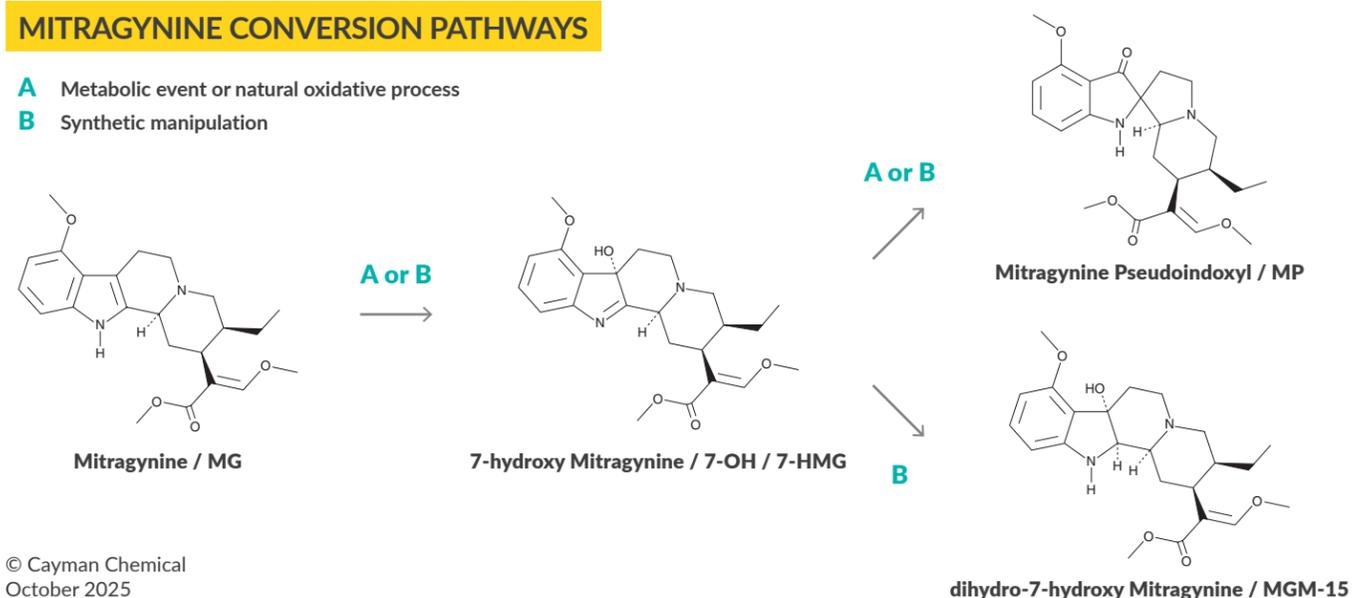
Mitragynine can be isolated from kratom leaves and then synthetically transformed into 7-hydroxy mitragynine and other semi-synthetic compounds. Using mitragynine as a scaffold, scientific researchers have designed novel opioids with significantly enhanced μ -opioid receptor activity. One such compound, MGM-15 (dihydro-7-hydroxy mitragynine), first described in 2014, is a highly potent semi-synthetic opioid that can be synthesized from 7-hydroxy mitragynine in a single step.

Semi-Synthetics Raise Concern: A New Class of NPS

In recent years, the emergence of semi-synthetic opioid NPS derived from mitragynine in the consumer marketplace has raised concerns, with significant increases in overdose encounters reported. Analytical testing of some products found mitragynine pseudoindoxyl, an opioid far more potent than 7-hydroxy mitragynine. Additionally, in September 2025, a *Drug Testing & Analysis* communication confirmed the presence of MGM-15 in commercially available tablets. It is important to underscore that MGM-15 is not naturally occurring.

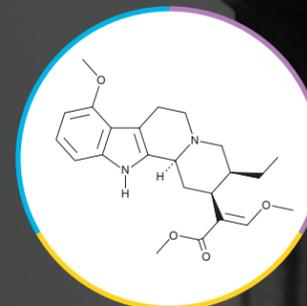
MITRAGYNYNE CONVERSION PATHWAYS

- A** Metabolic event or natural oxidative process
- B** Synthetic manipulation

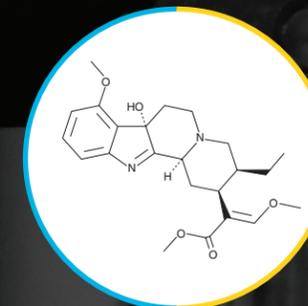


© Cayman Chemical
October 2025

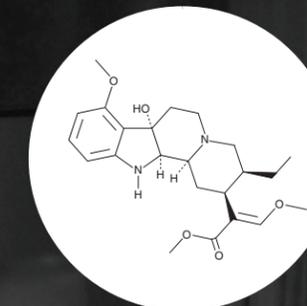
AVAILABLE ANALYTICAL STANDARDS



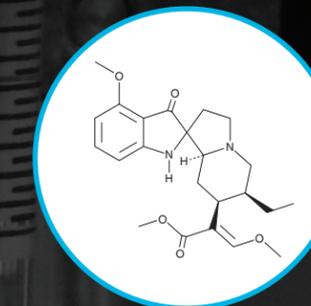
Mitragynine
/ MG
(18567 | 11151 | 18930 | 18929)



7-hydroxy Mitragynine
/ 7-OH / 7-HMG
(35468 | 13114 | 42292)



dihydro-7-hydroxy Mitragynine
/ MGM-15
(43910)



Mitragynine Pseudoindoxyl
/ MP
(44084 | 20033)

Natural Kratom Alkaloids & Related Semi-Synthetic Opioids

Compound Name	Synonyms	Item Nos.	Natural	Semi-Synthetic
Mitragynine	MG	18567 11151 18930 18929	✓	
7-hydroxy Mitragynine	7-OH / 7-HMG	35468 13114 42292	✓	✓
dihydro-7-hydroxy Mitragynine	MGM-15	43910		✓
Mitragynine Pseudoindoxyl	MP	44084 20033	✓	✓
7-acetoxy Mitragynine		44107		✓
16-carboxy Mitragynine		27538	✓	✓
9-O-desmethyl Mitragynine		27540	✓	✓
Speciogynine		38997 25794	✓	
7-hydroxy Speciogynine		42824	✓	✓
Paynantheine		38999 21841	✓	
Speciociliatine		38994 27246	✓	
Corynantheidine		37859	✓	
Corynoxine B	Cory B / 7-Isocorynoxine	27827	✓	
Isopaynantheine	3-Isopaynantheine	39879	✓	✓
Mitraciliatine		39856	✓	✓
Mitraphylline		25528	✓	

CRM Deuterated CRM Internal Standard *Italics = In Development*

CAN'T FIND YOUR UNKNOWN?

Discover All Drug Identification Tools & Resources at www.caymanchem.com/forensics