

2-METHYL AP-237 (Street Name: 2-MAP)

Introduction:

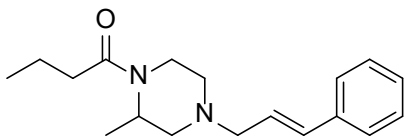
2-Methyl AP-237 is a novel synthetic drug that emerged on the illicit drug market in 2019. 2-Methyl AP-237 exhibits opioid-like activity and, similar to other synthetic opioids, shares many of the same associated adverse health effects, including death. The seriousness of these health effects—in addition to the continued evolution, increased popularity, and increased availability of synthetic opioids—threatens public health and safety. This continued presence of new synthetic opioids with no approved medical use exacerbates the unprecedented epidemic of opioid misuse and abuse in the United States.

Licit Uses:

2-Methyl AP-237 is not approved for medical use in the United States.

Chemistry:

2-Methyl AP-237 is chemically known as 1-(2-methyl-4-(3-phenylprop-2-en-1-yl)piperazin-1-yl)butan-1-one (CAS 98608-61-8; hydrochloride salt 98608-59-4). 2-Methyl AP-237 is a methyl analogue of the opioid analgesic bucinnazine (AP-237). Chemical syntheses of 2-methyl AP-237 and other piperizino derivatives—such as AP-237, para-methyl AP-237, and AP-238—were originally patented in the 1980s. The chemical structure of 2-methyl AP-237 is shown below:



Pharmacology:

Preclinical studies indicate that 2-methyl AP-237 exhibits μ -opioid receptor agonist properties. In vitro studies have shown that 2-methyl AP-237 binds to and activates μ -opioid receptors, similarly to fentanyl and morphine. In addition, in vivo studies have shown that 2-methyl AP-237 produced analgesic effects in mice. In rats, 2-methyl AP-237 fully substitutes for the discriminative stimulus effects of morphine in rats and is approximately 4 times more potent than morphine. In vivo studies have also demonstrated acute toxicity following 2-methyl AP-237 administration, including respiratory depression, convulsions, and death. Collectively, these data demonstrate that 2-methyl AP-237 has μ -opioid receptor agonist-like activity and may cause serious adverse effects.

Illicit Uses:

2-Methyl AP-237 is abused for its opioidergic effects and, like other μ -opioid receptor agonists, has a high potential for addiction and drug overdose. In drug overdose samples submitted to the Drug Enforcement Administration's (DEA) Toxicology Testing Program for comprehensive analysis, 2-methyl AP-237 was involved in 7 cases, of which 5 were fatal. In addition, the Centers for Disease Control and Prevention's State Unintentional Drug Overdose Reporting System reports that 2-methyl AP-237 was listed as the cause of death in 11 cases and detected in 10 fatal cases between January 2020 and June 2021.

User Population:

The user population of 2-methyl AP-237 likely mirrors that of other opioids.

Illicit Distribution:

DEA's National Forensic Laboratory Information System (NFLIS) Drug database collects scientifically verified data on drug items and cases submitted to and analyzed by participating federal, state, and local forensic drug laboratories. NFLIS-Drug has received 120 reports of 2-methyl AP-237 since 2019, including 49 reports in 2021, 14 in 2024, and 3 in 2025 (reports still pending). These reports indicate that law enforcement has encountered 2-methyl AP-237, alone and in combination with other substances.

Control Status:

2-Methyl AP-237 is controlled in schedule I of the Controlled Substances Act.