Expert Committee on Drug Dependence
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World Health Organization

1. Comments based on the review report

a. Evidence on dependence and abuse potential:

Watterson et al. (2012) tried to determine the relative abuse liability of methylone by employing intravenous self-administration and intracranial self-stimulation paradigms in rats. They demonstrated that methylone (0.05, 0.1, 0.2, and 0.5 mg/kg/infusion) dose-dependently functions as a reinforcer, and that there is a significant positive relationship between methylone dose and reinforcer efficacy. Together these results reveal that methylone may possess an addiction potential similar to or greater than MDMA, yet patterns of self-administration and effects on brain reward function suggest that this drug may have a lower potential for abuse and compulsive use than prototypical psychostimulants.

Gatch et al. (2013) tried to determine whether cathinone compounds stimulate motor activity and have discriminative stimulus effects similar to those of cocaine and/or methamphetamine. 3,4-Methylenedioxypyrovalerone (MDPV), mephedrone, naphyrone, flephedrone, and butylone were tested for locomotor stimulant effects in mice and subsequently for substitution in rats trained to discriminate cocaine (10 mg/kg, intraperitoneally) or methamphetamine (1 mg/kg, intraperitoneally) from saline. Methylone fully substituted for the discriminative stimulus effects of cocaine and methamphetamine.

b. Risks to individual and society because of misuse:

The rapid emergence of mephedrone in a sentinel drug-using population is indicative of a phenomenon of web-based information sharing and the near-global availability of easy and relatively cheap access to a range of potent psychoactive drugs.

c. Magnitude of the problem in countries (misuse, illicit production, smuggling etc):

Dopaminergic effects of methylone may contribute to its dependence potential, but this hypothesis awaits confirmation. Given the widespread use of methylone determining the consequences of repeated drug exposure warrants further study.

d. Need of the substance for medical (including veterinary) practice:

None.

e. Need of the substance for other purposes (e.g. industrial):

None.

f. Measures taken by countries to curb misuse:

Netherlands: In the Netherlands, methylone is not yet listed under the Opium Law, but is covered under the medicine act. Because methylone is not registered officially, as such, it is forbidden to trade in methylone.

New Zealand: In New Zealand, although methylone is not explicitly scheduled and falls outside the strict definitions of an "amphetamine analogue" in the Misuse of Drugs Act, it is considered to be "substantially similar" to methcathinone and is thus considered by law enforcement authorities to be a Class C illegal drug. Methylone was sold in New Zealand for around 6 months from November 2005 to April 2006 as an MDMA substitute, under the name "Ease". The product was withdrawn after legal disputes with the government.

UK: In the UK, methylone is illegal since the 16/04/2010 revision of the misuse of drugs act. Before this it was not specifically mentioned in United Kingdom (U.K.) law as the β-ketone was not covered under the Misuse of Drugs Act. In March 2010 plans were announced to make methylone and other cathinones, Class B drugs, "within weeks". While delayed by dissatisfaction in the ACMD, the revision was rushed through by the government with little regard for the views of the ACMD. The importation of the compounds was banned immediately.

Sweden: Sveriges riksdag added methylone to schedule I ("substances, plant materials and fungi which normally do not have medical use") as narcotics in Sweden as of Oct 1, 2010, published by Medical Products Agency in their regulation LVFS 2010:23 listed as Metylon, 2-metylamino-1-(3,4-metylendioxifenyl)propan-1-on.

Canada: Although not listed as a Schedule 1 substance, Health Canada reports that methylone falls under the scheduling as an analogue of amphetamine. However, Methylone bears the exact chemical difference between amphetamine and cathinone - and cathinone is listed as not being an analogue of amphetamine.

United States: As of October 21, 2011 the DEA has issued an emergency ban on methylone illegal to possess and distribute.

Arizona: Effective February 16, 2012, methylenedioxymethcathinone (methylone) was classified as a dangerous drug, making it a felony to knowingly possess, use, possess for sale, manufacture, administer, transport for sale, import into the state, or offer to transport for sale or import into this state, sell, transfer or offer to sell or transfer.

Florida: Meyhylone are now Schedule I under Florida law.

Louisiana: In January 2011, Louisiana in emergency scheduled 3,4-methylenedioxymethcathinone (methylone).

Tennessee: On May 5, 2011, Tennessee signed a law making it a crime to knowingly produce, manufacture, distribute, sell, offer for sale or possess with intent produce, manufacture, distribute, sell, or offer for sale any product containing 3,4-methylenedioxymethcathinone (methylone).

Texas: In September 2011, Texas added 3,4-methylenedioxy-N-methylcathinone to the Penalty Group 2 listing of the Health and Safety Code. Possession of a substance in penalty group 2 is a minimum of a state jail felony.

Michigan: Schedule 1 controlled substance in 2012**.**

g. Impact if this substance if scheduled :

Twenty-nine respondents of WHO questionnaire survey reported that if methylone was placed under international control, they would have the laboratory capacity to identify the substance. It has no reported medical use.

2. Additional information to the critical review report

3. Other comments or opinions

Further basic science, epidemiological and clinical research is required to determine the nature and extent of risk associated with the use of methylone. Methylone resembles MDMA in its behavioral profile, as it substitutes for MDMA in rats trained to discriminate MDMA from saline. Methylone does not substitute for amphetamine or for the hallucinogenic DOM in animals trained to discriminate between these drugs and saline. Further, also in common with MDMA, methylone acts on monoaminergic systems. In vitro, methylone has one third the potency of MDMA at inhibiting platelet serotonin accumulation and about the same in its inhibiting effects on the dopamine and noradrenaline transporters. In spite of these behavioral and pharmacological similarities between methylone and MDMA, the observed subjective effects of both drugs are not completely identical.

4. Expert reviewer's view on scheduling with rationale

Although there is paucity of data on methylone, due to similarities with MDMA, Schedule 1 of 1971 convention could be considered.