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**GLOBAL
SMART
UPDATE**



EN

**“Tuci”, “happy water”,
“k-powdered milk” – is the illicit
market for ketamine expanding?**

VOLUME 27

Abstract

Ketamine is a psychoactive substance with stimulant and dissociate effects used in human and veterinary medicine as an anaesthetic. Recent information on its non-medical use points to a possible expansion driven by large-scale illicit manufacture and novel forms of presentation of drug products containing the substance, such as “happy water”, “k-powdered milk” or “tuci” (“pink cocaine”). This Global SMART Update explores how drug traffickers introduce new ketamine-related products, including to new user groups and geographic areas, while sophisticated large-scale clandestine manufacture has been detected and new trafficking routes have been discovered.

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About the Global SMART Update

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The Global SMART Programme enhances the capacity of Member States in priority regions to generate, manage, analyse, report and use synthetic drugs information to design effective policy and programme interventions. The main products and services of the Global SMART Programme include capacity building workshops; online drug data collection; national, regional and global assessment reports; and the UNODC Early Warning Advisory (EWA) on New Psychoactive Substances (NPS). The UNODC EWA is a web portal that provides access to information on NPS, including latest developments, emergence of NPS, global trends, chemical analysis, toxicology, pharmacology and legislative responses. (Available at: www.unodc.org/nps).

The information and data contained within the Global SMART Updates are from the Annual Report Questionnaire (ARQ) submitted by Member States to UNODC, the UNODC Early Warning Advisory on NPS, official Government reports, press releases, scientific journals or incidents confirmed by UNODC Field Offices. This report has not been formally edited. The contents of this publication do not necessarily reflect the views or policies of UNODC or contributory organizations and neither do they imply any endorsement.

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“Tuci”, “happy water”, “k-powdered milk” – is the illicit market for ketamine expanding?

Introduction

Ketamine is a psychoactive substance with stimulant and dissociate effects used in human and veterinary medicine as an anaesthetic. Recent information on its non-medical use, which has been reported in Asia, Europe and the Americas for decades, points to a possible expansion driven by large-scale illicit manufacture and novel forms of presentation of drug products containing the substance. In recent years, a drug product marketed as “happy water” and “k-powdered milk” emerged in South-East Asia which often contained ketamine along with other drugs. In Latin America, pink powder sold as “cocaina rosada” (literally: “pink cocaine”), “tuci”¹ or “tucibi” has emerged, which frequently contains ketamine rather than cocaine or 2C-B as the street name seems to suggest. This Global SMART Update explores how drug traffickers introduce new ketamine-related products, including to new user groups and geographic areas, while sophisticated large-scale clandestine manufacture has been detected and new trafficking routes have been discovered.

Effects and medical use of ketamine

Ketamine, which was first synthesised in 1962 and patented in Belgium in 1963,² is widely used as an anaesthetic in human and veterinary medicine and is included in the World Health Organization (WHO) Model List of Essential Medicines as well as the WHO Model List of Essential Medicines for Children. It has analgesic, hypnotic and short-term memory loss effects and is used for the induction of anaesthesia, procedural sedation and analgesia. It is particularly important

countries and in crisis situations.³ Currently, research is being undertaken in some countries to assess the potential use of ketamine in therapy for treatment-resistant depression.⁴

The non-medical use of ketamine has been reported at least since the 1970s.⁵ As a dissociative, ketamine belongs to a class of hallucinogens which modulate effects at the N-methyl-D-aspartate receptor in the brain and produce feelings of detachment and dissociation from self and the environment.⁶ The effects of ketamine are dose-related and include stimulant as well as “psychedelic” effects.⁷ In non-medical use, the most common routes of administration are insufflation of ketamine powder and injection of liquid preparations.⁸ The non-medical use of ketamine is related to a number of severe adverse health effects. High doses of ketamine used outside a medical context can cause cardiovascular and respiratory toxicity effects as well as other adverse effects such as bladder problems, anxiety, panic

attacks, palpitations, tachycardia, chest pains, depression, aggravated symptoms of existing mental health issues, slurred speech and the inability to speak.⁹

Emerging trends in South-East Asia

In South-East Asia, drug products marketed as “happy water” and “k-powdered milk” have emerged on the illicit market in recent years. Samples of these products may contain a range of different psychoactive substances in varying combinations and concentrations, with ketamine being a frequently identified ingredient. “Happy water” is typically sold online through social media and in entertainment venues in liquid form or as a powder to be dissolved in drinks. “Happy water” products have been encountered in Myanmar,¹⁰ Singapore¹¹ and Thailand. In Thailand, 14 of 19 tested samples contained ketamine combined with other substances.¹²

Photo: Sample of “happy water” from Thailand



In Thailand, a series of drug overdose cases occurred in January 2021 resulting in 13 deaths among users of “k-powdered milk”. The drug was presented to users as ketamine. According to autopsy results, these “k-powdered milk” samples contained ketamine, diazepam and caffeine in varying combinations and concentrations.¹³

Although users of these novel drug products may not be aware of the presence of ketamine, the emergence of such products in the region, which has an already established ketamine-user population, gives rise for concern as it could indicate a future market expansion. Trends in the non-medical use of ketamine in East and South-East Asia generally seem to mirror those related to methamphetamine which has seen a decrease in mainland China and increases in other parts of the region. Wastewater studies indicate that the non-medical use of ketamine has decreased in China in recent years.¹⁴ This decline is also reflected in the number of registered ketamine users in China which fell from 236,000 in 2015 to only 37,449 in 2021.¹⁵ In Hong Kong, China, on the other hand, the - albeit low - number of reported non-medical users of ketamine increased between 2019 and 2021, particularly in the under-21 age group.¹⁶ Perception by experts regarding the non-medical use of ketamine also indicates increases in Cambodia¹⁷ as well as in Thailand, where admissions into treatment for ketamine use disorders increased from only 51 cases in 2014 to 1,093 in 2019¹⁸ after which they fell to about half that number in 2021,¹⁹ possibly as an effect of the COVID-19 pandemic.²⁰

Emerging trends in Latin America

In Latin America, several countries have reported drug products being

rosada” (“pink cocaine”), “tuci” or “tucibi” (other spellings include “tucci” and “tusi”) in recent years. The street names “tuci” and “tucibi” seem to be derived from the abbreviation 2C-B, pronounced as “tusibi”, which stands for 4-bromo-2,5-dimethoxyphenethylamine, a phenethylamine with stimulant and hallucinogenic properties controlled under Schedule II of the Convention on Psychotropic Substances of 1971.²¹ It is typically offered on illicit drug markets in tablet form or as a white powder. Analysed samples of “tuci” in Latin America often did not contain any 2C-B, rather they contained ketamine in combination with MDMA (3,4-methylenedioxyamphetamine), methamphetamine, cocaine, opioids and/or other new psychoactive substances (NPS). It is unclear whether drug traffickers are trying to mimic the stimulant and hallucinogenic effects of 2C-B with these substance combinations.

In Colombia, the analysis of samples submitted as “tuci” to a national drug checking service in 2021 frequently contained ketamine, MDMA, amphetamine or a range of NPS. Out of 228 tested “tuci” samples, 71 per cent

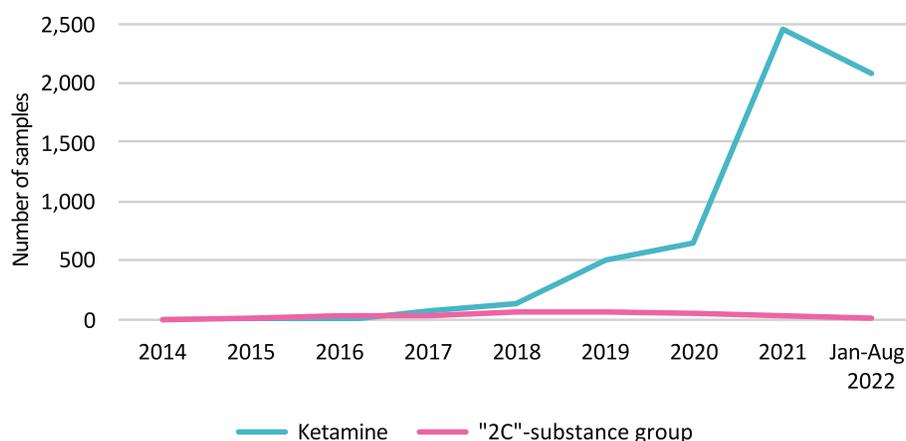
contained ketamine among other substances.²² In a separate exercise, in samples of synthetic drugs tested by the Early Warning System of Colombia, ketamine and MDMA were the second most identified substances after methamphetamine with samples containing ketamine often also containing MDMA.²³

In 2021, the National Drug Observatory of Chile warned about the growth on illicit drug markets of “tuci” products which do not contain 2C-B and the risk this situation poses for the population, referring to similar developments in Colombia.²⁴ Indeed, 99 per cent of the 2,093 samples submitted as substances from the “2C” substance group to the Instituto de Salud Publica de Chile in 2022 contained ketamine while substances from the “2C” group were only identified in 13 samples (see Figure 1).²⁵

In Argentina, samples of “tuci” analysed in 2019 contained ketamine and MDMA²⁶ and in 2021 and 2022, MDMA, methamphetamine, ketamine and/or caffeine as well as xylocaine.²⁷

In Uruguay, “tuci” was reported for the first time in 2020, leading to an

FIG. 1: Substances identified in drug products submitted as “2C” group samples in Chile, 2014-2022



Source: Official communication from Instituto de Salud Publica de Chile (September 2022). Note: Samples included in the “2C”-substance group category may contain one or more of the substances

early warning alert when laboratory analysis revealed the presence of ketamine, MDMA, cocaine, caffeine and, in some instances, also tramadol.²⁸ All samples of “tuci” tested in Uruguay in 2022 up to the time of writing this report contained ketamine in combination with other substances.²⁹

Thus, users of “tuci” in Latin America may not be aware that ketamine or other psychoactive substances may potentially be present in products sold under this name, exacerbating the health risks associated with its use. Moreover, the non-medical use of ketamine is found among specific sub-population groups who consciously seek out this drug. A 2021 survey in Bogota, Colombia of 208 persons who inject drugs revealed a very high lifetime prevalence of ketamine use (80 per cent) with a significant proportion of users reporting having injected the substance.³⁰ In Brazil, ketamine was identified in almost one third (29.4 per cent) of 462 oral fluid samples collected between September 2018 and January 2020 at parties and electronic music festivals,³¹ indicating its popularity in this context. In Argentina, a survey of university students in 2019 indicated a lifetime prevalence of ketamine use of 2.7 per cent for male and 1.2 per

cent for female students. A smaller proportion of respondents reported concomitant use of ketamine with stimulants or hallucinogens.³²

Emerging trends in Europe and North America

While the emergence of a drug product presented as a pink powder under the street name “tuci” was first observed in South America, cases of “tuci” have also been reported recently by law enforcement agencies and drug checking services in Europe and North America. Not only the peculiar form of presentation matched the phenomenon known from South America, but also the “branding”, as the samples were submitted as “pink cocaine” or “2C-B”. As such samples most frequently contained ketamine in combination with other substances, several drug checking services in Europe published alerts to warn their audiences that drug products offered as “2C-B” may not contain 2C-B. The emergence of “tuci” in Europe gained additional attention when Spanish authorities reported their largest seizure of “pink cocaine”³³ amounting to 13.25 kg in August 2022 in relation to an operation

involving groups with links to Colombia,³⁴ indicating a possible connection between the emergence of “tuci” in Europe and drug trafficking organizations in Latin America.

Latest “tuci” updates from Europe and North America

 The UK drug checking service The Loop published an alert in August 2022 about pink “tusi”, a drug mixture that frequently contains ketamine, MDMA, starch and caffeine.³⁵

Photo: Alert on “tusi” in the United Kingdom

CAUTION: Powder sold as pink 'tusi' found onsite at Lost Village 2022

Pink tusi is not 2C-B. It is not a new drug. It is a mixture of several drugs, almost always dyed pink. Tusi often contains **ketamine, MDMA & caffeine**, as identified in Lost Village tests, but it can contain any drug. **Every batch is different.** Despite rarely containing cocaine, it is sometimes called 'pink cocaine'.

Be extra cautious if mixing drugs, because you might not know how you will react to that mixture.

Drug mixtures like 'tusi' can be highly unpredictable in contents & effects. Seek medical help if unwell.



Credit: The Loop.

 The Austrian drug checking service Check-it published an alert in August 2022 about a sample submitted as “2C-B” that contained 509mg/g of ketamine and 228 mg/g of MDMA.³⁶

Photos: Seizure carried out by Equipo Contra el Crimen Organizado - Unidad Central Operativa de la Guardia Civil in Spain in August 2022



📢 The Spanish drug checking service International Energy Control identified ketamine in 71 out of 72 samples submitted as “tucci” between 2019 and 2021, the vast majority of which were in the form of a pink powder.³⁷

📢 The Swiss drug checking service Saferparty issued several alerts between December 2021 and July 2022 about drug products in the form of a pink powder sold as “2C-B” or “2C-I” that contained ketamine, MDMA, 2C-B, 2C-I and/or amphetamine.³⁸

Photo: Sample of pink powder sold as “2C-I” in Switzerland



Credit: Drug Information Centre (DIZ) Zurich.

📢 In August 2022 a Canadian drug checking service, Get your Drugs Tested, issued an alert regarding a drug product sold as “tucci” which contained substances not belonging to the 2C group³⁹ (see Photo). According to the drug checking service, samples of a seized pink powder submitted as “2C-B” contained mostly ketamine, MDMA and caffeine, while samples of seized material containing 2C-B were typically not in pink powder form.⁴⁰ In January 2022 a suspected “2C-B” seizure in Ontario⁴¹ was analysed by Health Canada’s Drug Analysis Service and found to contain a combination of ketamine, methylenedioxyam-

Photo: Alert of Canadian drug checking service

08/16/2022
Montreal, QC

Sold as:
Tucci

Results:
Ketamine 45-50%, Lactose 25-30%,
Caffeine 10-15%, MDMA 5-10%

Notes:
Tucci (pronounced 'two-see') is the name given to a cocktail of various types of substances that may differ from batch to batch. Despite its name, it typically does not contain any 2C family substances, such as 2C-B.

Credit: Get your Drugs Tested.

In some European countries, recent information points to an increase in the prevalence of non-medical ketamine use. In the Netherlands, for example, the popularity of ketamine has grown among young people in nightlife settings.⁴³ By 2021, one in ten college and university students had used ketamine at some point in their lives and a smaller proportion of students (5.8 per cent) had used ketamine in the past year.⁴⁴ In England and Wales, the annual non-medical use of ketamine among the population aged 16-59 has stabilized at a high level since fiscal year 2017/18 after previously more than doubling from 0.3 per

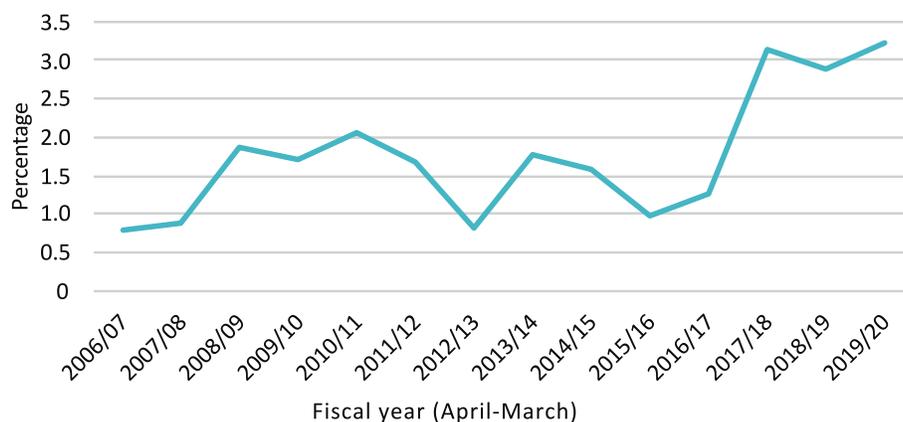
cent in 2006/07 to 0.8 per cent in 2019/20.⁴⁵ This trend is even more pronounced among 16–24-year-olds with prevalence levels reaching 3.2 percent in 2019/20⁴⁶ (see Figure 2).

Diversions and illicit manufacture of ketamine

In the period 2018-22, 81 countries and territories (out of a total of 135 providing information) from all continents reported ketamine to the UNODC Early Warning Advisory on NPS.⁴⁷ Where does the ketamine offered on illicit drug markets come from and what could be behind the expansion reflected in the emergence of new drug products containing ketamine and its increased non-medical use? Potentially, it stems from three main sources:

1. Diverted bulk ketamine: i.e. ketamine produced for the pharmaceutical industry which, before it is used in the final pharmaceutical product, is diverted somewhere along the production chain.
2. Diverted pharmaceutical ketamine: a range of products containing ketamine are available, often in the form of an (injectable) solution,

FIG. 2: Prevalence of past-year use of ketamine among the population aged 16-24 in England and Wales, United Kingdom, fiscal year 2006/07-2019/20



Source: United Kingdom, Office for National Statistics, Dataset Drug misuse in England and Wales, Table 1.08 (2020). Available at: www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice

which could, for example, be stolen from pharmacies or diverted from hospital or veterinary stocks.

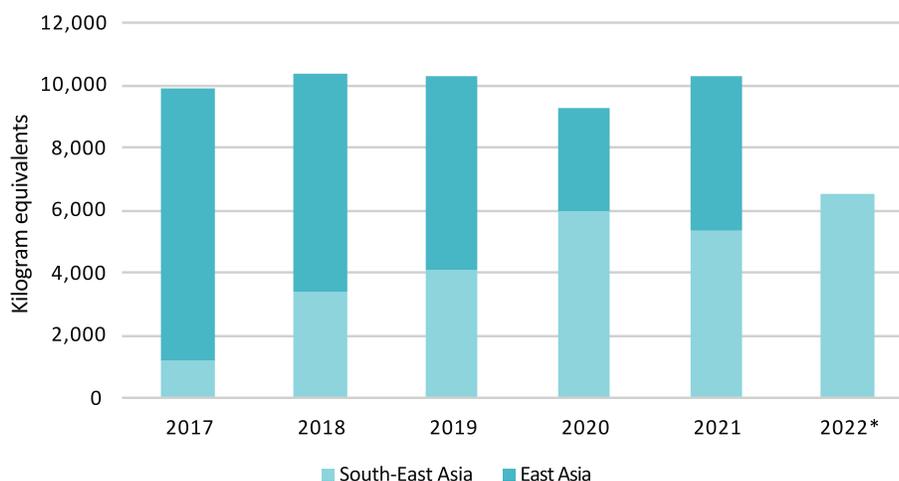
3. Ketamine from illicit manufacture synthesised from precursor chemicals.

In a 2002 risk assessment of ketamine, the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) stated that ketamine sold illicitly for non-medical use mainly appeared to be diverted from legitimate supplies of either the bulk drug or pharmaceutical preparations, as its manufacture required a complicated multi-step synthesis and specific precursors.⁴⁸ Similarly, the WHO noted in 2014 that the chemical synthesis of ketamine was difficult, and that its manufacture was rare in most countries.⁴⁹ One reason for this assessment might be that two important precursors of ketamine, 1-[(2-chlorophenyl)-N-(methylimino)methyl]cyclopentanol, referred to as “hydroxylimine” in International Narcotics Control Board (INCB) reports, and o-chlorophenyl cyclopentyl ketone,⁵⁰ are not often traded legitimately, nor are they typically available off-the-shelf.⁵¹

However, recent evidence has changed views on the feasibility of manufacturing ketamine under clandestine conditions and its importance for the illicit drug market. In 2015, the Government of China informed the Commission on Narcotic Drugs (CND) that the majority of the ketamine available on the illicit market in Asia was synthesized in clandestine laboratories rather than diverted from licit channels. As such clandestine laboratories were capable of synthesising “hydroxylimine” from a variety of pre-precursor chemicals, the Government considered that there was a high risk of such technical knowledge potentially spreading to other countries and regions.⁵²

Indeed, large-scale, sophisticated, clandestine laboratories related to the illicit manufacture of ketamine have been dismantled in several countries in East and South-East Asia, a region which

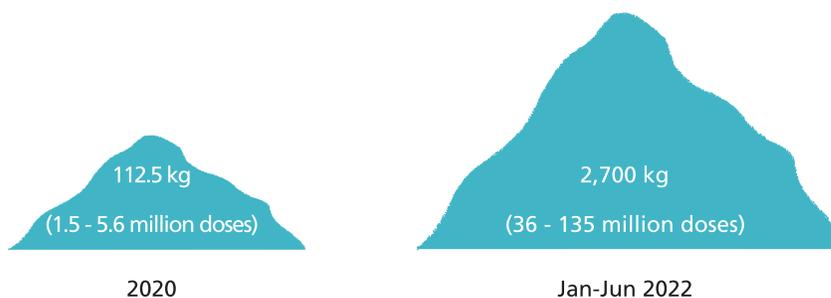
FIG. 3: Seizure amounts of ketamine in East and South-East Asia, 2017-2022*



Source: Drug Abuse Information Network for Asia and the Pacific (DAINAP); UNODC, responses to the annual report questionnaire and official communication with national drug agencies in the region (February - August 2022).

Note: *Data for 2022 are still preliminary and are not yet available for East Asia.

FIG. 4: Ketamine seizure amounts in Cambodia in 2020 and 2022



Source: DAINAP, 2022 and Saferparty (see note below).

Note: The dose equivalent is given for illustration purposes only and refers to non-medical use of ketamine by insufflation. The range was estimated based on information available at: en.saferparty.ch/substanzen/ketamin#dosierung and seizure information from DAINAP, 2022.

ketamine seizures globally.⁵³ Within East and South-East Asia, a remarkable geographic shift in seizure amounts from East Asia to South-East Asia has been observed (see Figure 3), mostly due to a decline in seizure amounts in China and Taiwan, Province of China. Hong Kong, China, where ketamine seizure amounts increased nearly sevenfold in 2021 compared to the previous year to 3.2 tons,⁵⁴ is a notable exception to this sub-regional trend, however this increase is due to two large-scale ketamine shipments originating from other regions.⁵⁵

The decline in ketamine seizure amounts in East Asia has been compensated by a parallel increase in South-East

have reached a new high of 6.5 tons, despite the collection of data for the year not yet being complete.⁵⁶

Since 2021, the largest amount of ketamine seizures in South-East Asia has been reported by Cambodia. Up to June 2022, 2.7 tons of the drug had been seized, an equivalent of up to 135 million doses if used non-medically,⁵⁷ compared to only 112.5 kg seized in 2020 (see Figure 4).⁵⁸

The increase in ketamine seizures in Cambodia has been associated with growing evidence of illicit manufacture of ketamine in the country, as confirmed by the recent detection of several

Photo: Large-scale clandestine ketamine laboratory dismantled in Cambodia, December 2021



Credit: National Authority for Combating Drugs Cambodia.

In December 2021, Cambodian authorities dismantled a large-scale clandestine ketamine manufacturing facility. Follow-up investigations led to the dismantling of a second large-scale illicit laboratory as well as a chemical storage facility suspected to be used to manufacture ketamine and possibly other synthetic drugs in

January 2022.⁵⁹ Also in 2022, another suspected illicit ketamine drug processing laboratory,⁶⁰ a processing site and six storage locations have been detected.⁶¹ Illicit ketamine manufacture has also been gaining importance in other East and South-East Asian countries over the past years. In 2020, three clandestine ketamine laboratories were dismantled in Malaysia in addition to two kitchen-sized laboratories in Hong Kong, China.⁶² In Taiwan Province of China, 1,183 kg of “hydroxylimine” were seized in 2019, indicating the presence of clandestine ketamine laboratories.⁶³

The illicit manufacture of ketamine is not unique to East and South-East Asia; Belgium and the Netherlands both dismantled one ketamine laboratory each in 2020. Ketamine manufactured illicitly in Europe might be trafficked for non-medical use to Asia.⁶⁴ Indeed, Viet Nam and the Republic of Korea,

for example, have seized increasing quantities of ketamine originating from Europe, particularly the Netherlands and Germany⁶⁵ and in May 2022, customs officers from Hong Kong, China seized 200 kg of suspected ketamine shipped from the Netherlands via Taiwan Province of China.⁶⁶

An uneven landscape of ketamine control

In response to the non-medical use, trafficking and clandestine manufacture of ketamine, countries have introduced a wide range of national controls in the past decades. National legal controls range from adding ketamine to narcotic laws, thereby typically introducing a relatively strict control regime, to listing it under a medicines act, which might establish only relatively weak reporting or licensing obligations (see Table 1).

Table 1: Control status of ketamine in selected countries

Country	Control status of ketamine
Argentina	Regulated by Article 77 of the Penal Code in Decree No. 560/2019, Annex II. ⁶⁷
Austria	Regulated by the Law on New Psychoactive Substances. ⁶⁸
Brazil	Controlled under the B1 list (List of psychotropic substances). ⁶⁹
Cambodia	Controlled under the Law on Drug Control. ⁷⁰
Canada	Controlled under Schedule I of the Controlled Drugs and Substances Act. ⁷¹
Chile	Controlled under Decree 867 of Law 20.000. ⁷²
China	Controlled under Category I of the List of Psychotropic Substances of 2013. ⁷³
Colombia	In the National List pursuant to Technical Annex I of Resolution No. 315 of 2020. ⁷⁴
Hong Kong, China	Listed as a dangerous drug under the Dangerous Drugs Ordinance. ⁷⁵
India	Controlled under 'Schedule X' of the Drugs & Cosmetics Act, 1940. ⁷⁶
Malaysia	Medical use controlled under the First Schedule (Part III) of the Dangerous Drugs Act 1952. ⁷⁷
Myanmar	Controlled under the Narcotic Drugs and Psychotropic Substances Law since 2005. ⁷⁸
Netherlands	Included in the Medicines Control Act. ⁷⁹
Pakistan	Ketamine and its salts controlled under the Schedule of Control of Narcotic Substances Act, 1997. ⁸⁰
Singapore	As a Class A controlled drug under the First Schedule of the Misuse of Drugs Act 1973. ⁸¹
Spain	Included in Annex I, List 4 of Decree 2829/1977, which regulates psychotropic medicinal substances and preparations. ⁸²
Switzerland	Controlled under the Narcotics Act (with exceptions). ⁸³
Taiwan, Province of China	Placed as a Category III Drug in the Narcotics Hazard Prevention Act. ⁸⁴
Thailand	Controlled in Category 2 of the Psychotropic Substances Act. ⁸⁵
Uruguay	Regulated under Narcotics Law 14.294. ⁸⁶
United Kingdom of Great Britain and Northern Ireland	Reclassified as a Class B drug in 2014. ⁸⁷
United States of America	Schedule III non-narcotic substance under the Controlled Substances Act. ⁸⁸
Viet Nam	Listed on a Supplementary List of Table III which refers to substances that are poisonous narcotic substances. Use is limited to analysis, testing, scientific research, criminal investigations or the health sector. ⁸⁹

Note: The legal norms listed in the above table are included as examples of national controls on ketamine from a variety of open access sources available to date. Additional norms may regulate ketamine in the countries and territories listed. The norms listed have not been reported officially to UNODC and the information contained in this table

The control status of ketamine at the international level, i.e. whether, and if so, what kind of international control would be useful, has been discussed by the international community for at least two decades. Through Resolution 45/2, *Enhanced measures for international cooperation in the control of illicit drugs*, which mentions “National action to prevent the trafficking in and abuse of new drugs such as ketamine and amphetamine-type stimulants, including by placing them under national control”,⁹⁰ CND drew attention to the topic in 2002. Following this, at a WHO Expert Committee on Drug Dependence (ECDD) meeting in September 2002, ketamine was pre-reviewed for the first time and recommended for critical review.⁹¹ Since then, a critical review and updates of the critical review have been undertaken, based on which the WHO recommended not to place ketamine under international control⁹² (see Figure 5). Following proposals by the Government of China to control ketamine under the 1971 Convention (2014 and 2015), the Commission

decided by consensus to postpone consideration of the proposal (Decision 58/2) and requested additional information from the WHO and other relevant sources.⁹³ Thus, to date, ketamine has not been placed under international control.

A drug policy dilemma?

While the discussion on ketamine may have lost intensity, new evidence has emerged suggesting that significant changes have occurred in the non-medical use and illicit manufacture of the substance. New drug products containing ketamine are being marketed in several regions, sophisticated large-scale clandestine manufacture has been detected and new trafficking routes have appeared. A renewed debate on ketamine may want to consider these new developments and address two core issues:

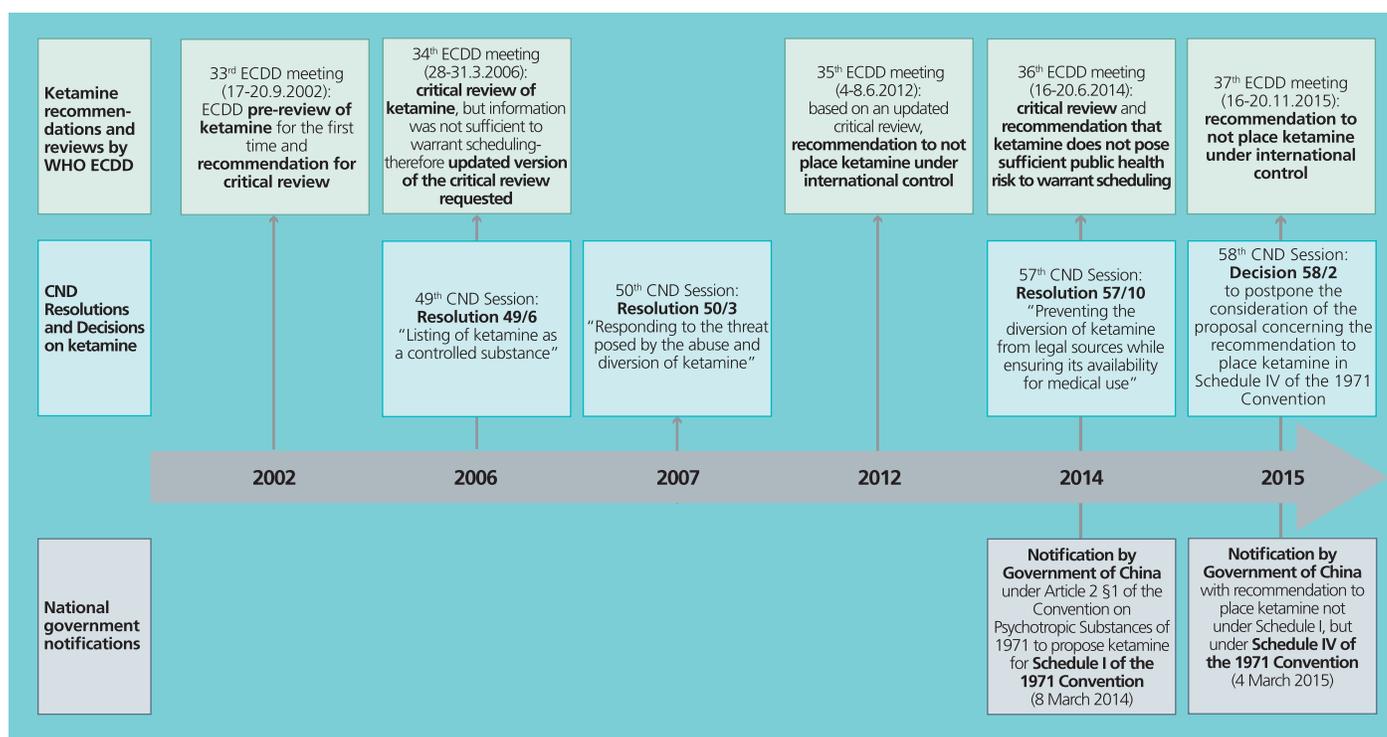
- How can the negative health implications associated with the non-medical use of ketamine be mini-

mized in a situation of expanding ketamine supply of illicit origin?

- How can new control requirements be balanced with the legitimate need for ketamine and avoid a negative impact on its availability for medical purposes, considering that national controls in many countries have been designed to prevent the diversion of ketamine from licit channels, and may not offer effective tools to counter illicit manufacture and international drug trafficking networks?

Clearly, the need to ensure access to ketamine as an essential medicine remains as important as ever, but the question remains: should the international community respond, and if so, how? The debate around ketamine seems to be facing a drug policy dilemma and will need to find a constructive way out. Acknowledging the new evidence available while recognizing the needs of all groups affected might be a first step in that direction.

FIG. 5: Major international notifications, recommendations and resolutions concerning ketamine



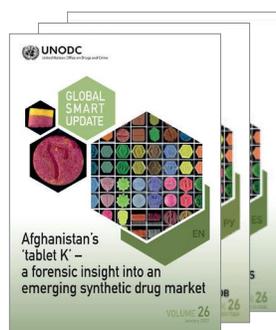
Source: For ECDD reviews: WHO ECDD, *Thirty-third report* (2002); *Thirty-fourth report* (2006); *Thirty-fifth report* (2012); *Thirty-sixth report* (2015); *Thirty-seventh report* (2016). For resolutions and decisions: CND, *Report of the 49th session* (2006); *Report of the 50th session* (2007); *Report of the 57th session* (2014); *Report of the 58th session* (2015). For national government notifications: CND. Further information provided by the People's Republic of

ENDNOTES

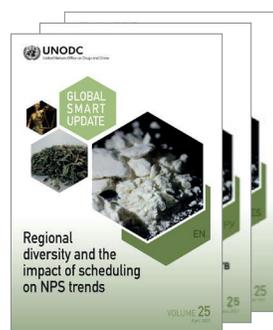
- 1 For the purpose of this report, the spelling “tuci” is used when referring to the street name of a pink drug product in powder form sold in illicit markets without making a determination of its content in chemical terms.
- 2 EMCDDA, *Report on the risk assessment of ketamine in the framework of joint action on new synthetic drugs* (2002).
- 3 WHO, *Report of advisory bodies* (2014).
- 4 Please see for example: United States of America, Food and Drug Administration, *FDA alerts health care professionals of potential risks associated with compounded ketamine nasal spray*, alert, 16 February 2022; Netherlands, National Drug Monitor, *Over ketamine*, 16 March 2022. Available at: www.nationaledrug-monitor.nl/ketamine-over-ketamine/
- 5 WHO Expert Committee on Drug Dependence (ECDD), *Thirty-third Report* (2003).
- 6 UNODC, *Early Warning Advisory on NPS, Phencyclidine-type substances* (n.d.). Available at: www.unodc.org/LSS/SubstanceGroup/Details/6bf165ed-82e7-47e0-9eaa-daacc42d99cd
- 7 Camh, *ketamine* (n.d.). Available at: www.camh.ca/en/health-info/mental-illness-and-addiction-index/ketamine
- 8 EMCDDA, *Report on the risk assessment of ketamine in the framework of joint action on new synthetic drugs* (2002).
- 9 WHO, *Fact file on Ketamine* (2016).
- 10 Myanmar, Central Committee for Drug Abuse Control (CCDAC), *Facebook post*, 03 June 2022. Available at: www.facebook.com/CCDACMyanmar/posts/pfbid0uJ3v7H5jJKNd6oXjDEUsyr-4E47tkvFZXDMkwo4ahu1t3jAR7VwvBt-zLLscBKorvI
- 11 The sample tests resulted in traces of methamphetamine, ketamine, caffeine, MDMA, 4-FPP and D2PV. Source: Official communication with Health Sciences Authority Singapore (September 2022).
- 12 Official communication with Office of the Narcotics Control Board (ONCB) of Thailand (September 2022).
- 13 UNODC, *Synthetic Drugs in East and South-East Asia* (2021).
- 14 UNODC, *World Drug Report 2022* (United Nations publication, 2022).
- 15 UNODC, *Synthetic Drugs in East and South-East Asia* (2022).
- 16 Hong Kong, China, Narcotics Division Security Bureau, *Central Registry of Drug Abuse Main Charts and Tables*, Table T16, n.d. Available at: www.nd.gov.hk/en/crda_main_charts_and_tables.html
- 17 UNODC, *Synthetic Drugs in East and South-East Asia* (2022).
- 18 UNODC, *World Drug Report 2022* (United Nations publication, 2022).
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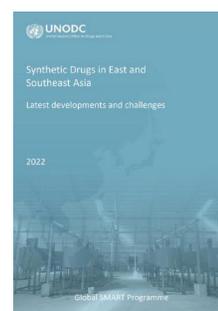
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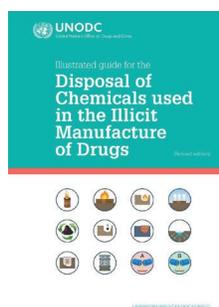
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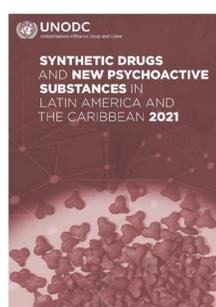
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Contact details

Global SMART Programme

Laboratory and Scientific Service
UNODC
Vienna International Centre
P.O. Box 500
A-1400, Vienna
Austria
unodc-globalsmart@un.org

www.unodc.org/unodc/en/scientists/smart-new.html
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