# Analysis of Ecstasy Characteristic in Bangkok Metropolitan Area

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## Abstract

This research involved analysis of ecstasy characteristic in Bangkok metropolitan area by education Chemical and Physical component of ecstasy education from criminal data for drug connection and education from ecstasy evidence at section for drug detection in central scientific crime detection division by this evidence from police station in Bangkok metropolitan area in 2014 – 2019.

The result from research in 2017 ecstasy evidence from police station to section for drug detection in central scientific crime detection division is most 90 case and lower in 2015 is 44 case percentage purity of ecstasy evidence is most 50.1 – 75% and lower 75.1 – 100% most colors from ecstasy evidence is blue color at 165 case and lower color from ecstasy evidence is red color at 5 case the data from this research for make Drug Profile.

Keywords: E DRUG / ECSTASY / DRUG PROFILE

# บทคัดย่อ

งานวิจัยนี้เป็นการศึกษาการวิเคราะห์ลักษณะของยาอีในเขตพื้นที่กรุงเทพมหานคร โดยทำการศึกษา ลักษณะองค์ประกอบทางเคมีและทางกายภาพของยาอีที่มีการเปลี่ยนแปลง โดยทำการศึกษาจากข้อมูล อาชญากรรมที่เกี่ยวข้องกับยาเสพติดและศึกษาจากยาอีของกลางที่กลุ่มงานการตรวจพิสูจน์ยาเสพติด กอง พิสูจน์หลักฐานกลางทำการตรวจพิสูจน์โดยของกลางที่ได้ส่งมาจากสถานีตำรวจนครบาล ระหว่าง ปี พ.ศ. 2557-2562

ผลการวิจัย พบว่า ยาอึในปี พ.ศ.2557-2562 มีของกลางยาอีที่ส่งมาตรวจพิสูจน์มีจำนวนมากที่สุด 90 รายการ ในปี พ.ศ.2558 มีจำนวนน้อยที่สุด 44 รายการเปอร์เซ็นความบริสุทธิ์ของยาอึในวัตถุของกลางมาก ที่สุด คือ 50.1-75% และน้อยที่สุดคือ 75.1-100% สีของเม็ดยาอีที่พบมากที่สุดคือ สีฟ้า มีจำนวน 165 รายการ และที่พบน้อยที่สุด คือ สีแดง มีเพียง 5 รายการ สิ่งที่ได้ประโยชน์จากการวิจัยครั้งนี้ คือ การนำข้อมูล ที่ค้นพบจัดทำเป็นฐานข้อมูลทางด้านยาเสพติด

**คำสำคัญ**: ยาอี / เอกซ์ตาชี่ / การวิเคราะห์ลักษณะเฉพาะ

#### Introduction

According to the study of drug spread problems that can be found continuously. There is also a tendency of increasing volumes every year. Due to the advancement in science and technology, the designer drugs providing the new types of drug by using gab in law to create brand new structure of drugs. Nowadays, physical changes that can be observed including changes in drug chemical composition. Which requires verification by scientific instrument such as gas chromatography for classification. It making the drug testing center as another organization that plays an important role in surveillance and proof of drug changes to reduce the drug smuggling, which is considered as a serious crime. The situation of the spread of drugs in the country is still a problem that needs to be solved. The crime data from crimes investigator in Bangkok represent the areas between metropolis since 2014 to 2019. It has been relating to the testing division, Central Bureau of Evidence was founded more than 400 cases. There is a sale and use of drugs called Ecstasy, which is chemically synthesized in a specialized laboratory call MDMA. There are many types of chemical names such as 3,4-methylenedioxyamphetamine (MDA), 3,4-methylenedioxyethylamphetamine (MDEA), Which Has a serious effect on the body.

Thailand to have ecstasy as a drug is in a first schedule of narcotics under the Drugs act 1994, which is a major national problem at the moment. Therefore, the monitoring is an important factor to prevent and eradicate the spread of ecstasy in the future.

### Objectives

1. The study of physical and chemical characteristic of ecstasy.

2. The study to estimate the drug smuggling in the metropolis area, including the ability to divide at the district level.

3. The study to tracking the spread of illegal drugs that are illegally produced from which provider.

#### Hypothesis

1. The ability to classify ecstasy by chemical and physical properties.

2. The ability estimates the drug smuggling in the metropolis area, including the ability to divide at the district level.

3. The ability to provide the drug map and illegal drug provider.

#### **Research Scope**

The crime data from Narcotic division represent the areas in Bangkok metropolis since 2014 to 2019.

### Expected

1. Know the chemical and physical of ecstasy properties.

2. Know the drug smuggling in the metropolis area, including the ability to divide at the district level.

3. Know the drug map and illegal drug distribution line.

4. Able to support the prevention and suppression of narcotic drugs in the future

#### Literature Review

1. Definition of narcotics

Originally referred to any substance that relieved pain, or induced sleep. Now, the term is used in a number of ways. Some people define narcotics as substances that bind at opioid receptors as cellular membrane proteins activated by substances like heroin or morphine, while others refer to any illicit substance as a narcotic. From a U.S. legal perspective, narcotics refer to opium, opium derivatives, and their semi-synthetic substitutes, though in U.S. law, due to its numbing properties, cocaine is also considered a narcotic. (Julien, Robert M.)

There are many different types of narcotics. The two most common forms of narcotic drugs are morphine and codeine. Both are synthesized from opium for medicinal use. The most commonly used drug for recreational purposes created from opium is heroin. Synthesized drugs created with an opium base for use in pain management are fentanyl, oxycodone, tramadol, pethidine (Demarol), hydrocodone, methadone, and hydromorphone. New forms of existing pain medications are being created regularly. The newest formulation to come out was in 2014, when zohydro, an increased dosage formula of hydrocodone was released; this it is the strongest hydrocodone formulation yet created for pain management, on par with moderate dose of oxycodone. (List of Narcotic Drugs, 2017)

Addiction is a brain condition that refers to intense seeking, craving, and using of a substance, even though it is harmful. Physical dependence is often, but not always, a component of addiction. The body quickly builds a tolerance to narcotics, requiring higher doses of a substance to feel the desired effects. A narcotic tolerance leads to dependence. When someone is physically dependent upon narcotics, they will go through withdrawal when they stop using them. Such as MDMA dependence complicates the issue of addiction even more and makes it much more difficult to stop using these drugs. In response to the addictive nature of amphetamine, many doctors have started limiting the number of prescriptions and are trying to recommend alternatives for pain management.

#### Definition

**THAI Narcotic Drugs** according to the Narcotics Act 1979 (No. 2 B.E. 1985 and No. 3 1987) which means any substance or object. Which taken into the body, whether eating, sniffing, pumping, or in any other way and causing effects on the body and mind.

Overtime, might need to increase the size of drug addiction sequentially to withdrawal. When medication is absent have a constant need for severe physical and mental abuse and general health will deteriorate. Including the plants or parts of plants which are produced as narcotics, may use it as a drug and the chemicals used in the production of narcotics as well as the announced by the Minister in the Government. But does not refer to some common household drugs under the law on drugs consist of narcotics.

## THAI Narcotic Drugs Classified

The Narcotics Drug Act 1979, which is the law that governs narcotics of Thailand. Has given the definition of a drug to be punished as referring to any substance or object that ingested into the body. Whatever of the method, such as eating, smoking, inhaling or injecting will cause 4 important effects on the body and mind, often include:

1. Strong demand for drugs use both physically and mentally.

- 2. Requiring higher doses of a substance to feel the desired effects.
- 3. Drug withdrawal symptoms occur, when stop intake drug.
- 4. The health of the drug users for a long time will deteriorate.

Defines the term 'narcotics' as being 'any form of chemicals or substances which, upon being consumed whether by taking orally, inhaling, smoking, injecting or by whatever means, causes physiological or mental effect in a significant manner such as need of continual increase of dosage, having withdrawal symptoms when deprived of the narcotics, strong physical and mental need of dosage and health in general being deteriorated. Substances defined as narcotics are classified into 5 categories. Commonly known substances falling within the ambit of the Narcotics Act include the following: (FDA, 2016)

- Category 1 Heroin; Amphetamine; Methamphetamine; MDMA (Ecstasy); LSD
- Category 2 Cocaine; Codeine; Methadone; Morphine
- Category 3 Medicine consist of narcotic in second schedule
- Category 4 Acetic anhydride; Ephedrine; Ergometrine; Isosafrole
- Category 5 Cannabis; Psychoactive mushrooms; Kratom Plant

# 2. MDMA (Ecstasy)

MDMA was first synthesized in 1912 by Merck chemist Anton Köllisch. At the time, Merck was interested in developing substances that stopped abnormal bleeding. Merck wanted to avoid an existing patent held by Bayer for one such compound: hydrastinine. Köllisch developed a preparation of a hydrastinine analogue, methylhydrastinine, at the request of fellow lab members, Walther Beckh and Otto Wolfes. MDMA (called methylsafrylamin, safrylmethylamin or N-Methyl-a-Methylhomopiperonylamin in Merck laboratory reports) was an intermediate compound in the synthesis of methylhydrastinine. Merck was not interested in MDMA itself at the time. On 24 December 1912, Merck filed two patent applications that described the synthesis and some chemical properties of MDMA and its subsequent conversion to methylhydrastinine. (DrugFacts, 2016)

## Forms

MDMA has become widely known as ecstasy (shortened "E", "X", or "XTC"), usually referring to its tablet form, although this term may also include the presence of possible adulterants or diluents. The UK term "mandy" and the US term "molly" colloquially refer to MDMA in a crystalline powder form that is thought to be free of adulterants. MDMA is also sold in the form of the hydrochloride salt, either as loose crystals or in gel caps.

Partly due to the global supply shortage of sassafras oil a problem largely assuaged by use of improved or alternative modern methods of synthesis the purity of substances sold as molly have been found to vary widely. Some of these substances contain methylone, ethylone, MDPV, mephedrone, or any other of the group of compounds commonly known as bath salts, in addition to, or in place of, MDMA. Powdered MDMA ranges from pure MDMA to crushed tablets with 30–40% purity. MDMA tablets typically have low purity due to bulking agents that are added to dilute the drug and increase profits (e.g., lactose) and binding agents. Tablets sold as ecstasy sometimes contain 3,4-methylenedioxyamphetamine (MDA),

3,4-methylenedioxyethylamphetamine (MDEA), other amphetamine derivatives, caffeine, opiates, or painkillers. Some tablets contain little or no MDMA. The proportion of seized ecstasy tablets with MDMA-like impurities has varied annually and by country. The average content of MDMA in a preparation is 70 to 120 mg with the purity having increased since the 1990s. (Molly Madness. Drugs, 2014)

## Consume

People who use MDMA usually take it as a capsule or tablet, though some swallow it in liquid form or snort the powder. The popular nickname Molly often refers to the supposedly "pure" crystalline powder form of MDMA, usually sold in capsules. However, people who purchase powder or capsules sold as Molly often actually get other drugs such as synthetic cathinone (bath salts) instead. Some people take MDMA in combination with other drugs such as alcohol, active within 45 minutes and the drug effect in the body for about 6-8 hours with maximum effect within 1-5 hours will be excreted from the body through the urine. Drugs can be completely eliminated from the body within 1 to 2 days.

# Adverse effects

The effects of MDMA on human brain structure and function have not been fully determined. However, there is consistent evidence of structural and functional deficits in MDMA users with high lifetime exposure. There is no evidence of structural or functional changes in MDMA users with only a moderate lifetime exposure. Nonetheless, MDMA in moderate use may still be neurotoxic. Furthermore, it is not clear yet whether "typical" users of MDMA will develop neurotoxic brain lesions. Long-term exposure to MDMA in humans has

been shown to produce marked neurodegeneration in striatal, hippocampal, prefrontal, and occipital serotonergic axon terminals. Neurotoxic damage to serotonergic axon terminals has been shown to persist for more than two years. Elevations in brain temperature from MDMA use are positively correlated with MDMA-induced neurotoxicity. However, most studies on MDMA and serotonergic neurotoxicity in human focus on the heaviest users, those who consume more than seven times the average. It is therefore likely that no serotonergic neurotoxicity is present in most casual users. Adverse neuroplasticity changes to brain microvasculature and white matter also occur in humans using low doses of MDMA. Reduced gray matter density in certain brain structures has also been noted in human MDMA users. Global reductions in gray matter volume, thinning of the parietal and orbitofrontal cortices, and decreased hippocampal activity have been observed in long term users. The effects established so far for recreational use of ecstasy lie in the range of moderate to severe effects for SERT reduction. (Roberts CA, Jones A, Montgomery C, April 2016)

Impairments in multiple aspects of cognition, including attention, learning, memory, visual processing, and sleep have been found in regular MDMA users. The magnitude of these impairments is correlated with lifetime MDMA usage and are partially reversible with abstinence. Several forms of memory are impaired by chronic ecstasy use. However, the effects for memory impairments in ecstasy users are generally small overall. MDMA use is also associated with increased impulsivity and depression. (Betzler F, Viohl L, Romanczuk-Seiferth N, January 2017)

Serotonin depletion following MDMA use can cause depression in subsequent days. In some cases, depressive symptoms persist for longer periods. Some studies indicate repeated recreational use of ecstasy is associated with depression and anxiety, even after quitting the drug. Depression is one of the main reasons for cessation of use. (Betzler F, Viohl L, Romanczuk-Seiferth N, January 2017)

At high doses, MDMA induces a neuroimmune response that, through several mechanisms, increases the permeability of the blood-brain barrier, thereby making the brain more susceptible to environmental toxins and pathogens. In addition, MDMA has immunosuppressive effects in the peripheral nervous system and pro-inflammatory effects in the central nervous system. (Boyle NT, Connor TJ, September 2010)

#### Pharmacodynamics

MDMA acts primarily as a presynaptic releasing agent of serotonin, norepinephrine, and dopamine, which arises from its activity at trace amine-associated receptor 1 (TAAR1) and vesicular monoamine transporter 2 (VMAT2). MDMA is also a monoamine transporter substrate, it enters monoamine neurons via these neuronal membrane transport proteins by acting as a monoamine transporter substrate, MDMA produces competitive reuptake inhibition at the neuronal membrane transporters. MDMA inhibits both vesicular monoamine

transporters (VMATs), the second of which (VMAT2) is highly expressed within monoamine neurons at vesicular membranes. Once inside a monoamine neuron, MDMA acts as a VMAT2 inhibitor and a TAAR1 agonist. MDMA is a ligand at both sigma receptor subtypes, though its efficacies at the receptors have not yet been elucidated. (Matsumoto RR July 2009)

### Literature Review

Narcotics Analysis and Technical Services Institution (ONCB 2008), based on the study of drug identification data from the proofs across the country. Once summarized as data, the production of methamphetamines in 2007 has now been distributed, which can be divided into groups. According to the unique characteristics of the tablets. There are only two large groups of drug infecting the country, the G1 group, which is still the most active drug that has spread to 45.04% and the G23 is the spread. Approximately 34.92 percent, therefore, about 80 percent of amphetamines that are dispersed in the country are amphetamines from these 2 groups, with the remaining 20 percent coming from a small amphetamines distributor about 75 groups. However, the G1 and G23 have different production locations, and both have production bases in Myanmar, with most G1 groups having smuggling routes from the north. Descend to the northwest side, most of the G23 amphetamines were smuggled into Laos and Cambodia to import to the east of Thailand. Methamphetamine additives, source X2 and X3, are still being mixed in amphetamine tablets as much as last year. The X2 source is used the most, 69.70% and is the most suitable source in Most tablets for many years The size and chemical structure of Methamphetamine remains the same. The mark on the amphetamine tablets is approximately 98.69% with WY letters were founded. The new symbols are around 2-3 examples, drug with low levels methamphetamine are increasing rapidly since 2006, and the methamphetamine made from local tools tends to increase.

Journal of Health Science (2016), The spread of amphetamine abuse has been caused serious problems for the country for longtime. The testing division is the optional to control and suppress amphetamine spread. In order to be aware of the components in amphetamine tablets. Therefore, the study is to review and analysis the situation of the amphetamine tablets. Due to the 2007-2013 by collecting the analysis drug data from the central crime forensic sciences police, both in quality and quantitative submissions sent by agencies under the National Police Agency to identify at the Bureau of Drugs. The Department of Medical Sciences, using 44,140 samples of thin layer chromatography and gas chromatography, found that most of the amphetamine tablets detected methamphetamine tablets is range about 0.00 to 40.00. In the data for all 7 years, the percentage of weight of Methamphetamine was highest in the range of 15.01 to 20.00 and was found up to 32.98 - 83.86 percent of the number of samples examined. In addition, drugs and other modern

drugs are also detected, such as tendon, N-dimethyl amphetamine. Ephedrine Paracetamol Chlorpheniramine Maleate and Diphenhydramine

In addition to the spread situation is still very ongoing. The amount of methamphetamine used in methamphetamine production did not decrease. It shows the severity concern of the amphetamine situation in Thailand. The information gathered will be basic information which will be useful for support the drug problems in the country.

## Research Methodology

## Chemicals

- 1) 3, 4-methylenedioxymethamphetamine
- 2) Methanol
- 3) Drug samples

## Equipment

- 1) Digital photograph
- 2) Sever and Data storage
- 3) Gas chromatography

## The procedure to collecting the drug analyzing samples data

Support data from Drug of abuse Identification Sub-Division, Central Scientific Crime Detection Division, Department of Narcotics Identification of Royal Thai Police to collection the sample data for classified and category the ecstasy from narcotic crimes data in the Bangkok area. In order to gather analysis data for the research between 2014 to 2019, by dividing into areas under the supervision of the metropolitan police headquarters.

## Identification the unique characteristics by using drug profile

The study of the unique characteristics of ecstasy. That was produced from different production sources. Due to the production of ecstasy at that time. There are various styles of production lines. According to the manufacturers with multiple sources. Including the layout of the production plant, chemicals used in drug synthesis including methods for producing ecstasy tablets. As a result, ecstasy tablets obtained from each source will have different appearance, such as the symbolic form on the tablet, hardness, moisture, proportional composition, as well as the color and impurities of drug.

Group analysis Classification of ecstasy using physical characteristics dissecting the analysis from the differences study also similarity of the specific symbols of the ecstasy tablets from various production sources, and then used for comparative study to separate into basic categories by following the criteria, the shape of the tablet, symbol on tablet, and the color of the tablet.

### Instrument Analytical

The analysis by using scientific instruments to analysis chemical composition and contaminants in the drug. There were examined the sample of the ecstasy with gas chromatography and mass spectroscopy (GC-MS) for in-depth information.

### Conclusion

### Summarized and discussion as following:

### 1. Monitoring the spread of illegal drug production

Ecstasy was smuggled into Thailand by foreigners, especially United States and Europeans. It is similar to cocaine and the other neurotically drug like amphetamines. But it has hallucinogenic effect stronger than amphetamines 10 times. There are more than 50 types of tablet were founded in Thailand, most of tablets are round with one side embossed or smooth. It might have a half break on the other side, printing pictures or letters on it. Moreover, in foreign countries there were letters Adam or Love. Which is the origin of name that smuggled use in Thailand.

Most of ecstasy widely spread in teenager who enjoy the night life. In patient in take the drug will stimulate the nervous system in short term and long term with hallucinogen effect. The drug consumer will feel hot, sweeting, fast heartbeat, high blood pressure and wrong retina color receives

### 2. Monitoring of drug outbreaks in Bangkok

The study of ecstasy analyze statistic from Drug of abuse Identification Sub-Division from the Metropolitan Police Station in Bangkok between 2014 – 2019(accept 2019 data up to July), it was found that during the 6 years which show in Table 1.

Year	2015	2016	2017	2018	2019(July)
Case	44	72	90	69	46

Table 1: The statistic of ecstasy crimes in Bangkok

According to the drug detection reports from Drug of abuse Identification Sub-Division will be made awareness of situation on ecstasy spreading in Bangkok. It can be used to predicted the direction of smuggled drug.

## 3. The identification of chemical composition of ecstasy

The characterization of chemical composition of ecstasy, which is proven by the Drug of abuse Identification Sub-Division during the 6 years between 2014 to 2019 (July). Could be classified the purity of the drug into 4 scales as following, 0% - 25% purity, 25.1 - 50%, 50.1 - 75% and 75.1 - 100%. In the total of 6 years, between 2014 - 2019, found that the purity of the drug between 50.1 - 75% has the highest number of cases is 154 cases. Second is the

purity of the drug between 0 - 25% is 141 cases. The purity of the drug between 25.1 - 50% is about 94 cases. The purity of between 75.1 to 100% is only 4 cases

## 4. The identification of the physical component of ecstasy

The characterization of physical component of ecstasy, which is proven by the Drug of abuse Identification Sub-Division during the 6 years between 2014 to 2019, by color examination from 393 cases. The round flat tablet with 11 colors, consisting of white, blue, orange, blue, gray, red, pink, brown, yellow, green, and purple. Blue color has the highest number of 165 cases, representing 41.9 percent, followed by pink having the 98 cases accounted for 24.9 percent, green is 26, accounting for 6.6 percent. Orange is 25 cases, accounting for 6.3 percent. White, brown, purple have the same amount of 17 cases, representing 4.3 percent. Yellow has 10 cases is 2.5 percent of the color. The physical characteristics of tablets can provide basic information in making a drug profile database for use in drug prevention and suppression.

## 5. Drug prevention and suppression

A community drug problem emerges when there are a significant number of people engaging in problematic drug use in a particular area and the community does not have adequate resources to deal with the problems that arise. Also national development must focus on the development of community indicators that reflect the impact of problem drug use in local communities. Therefore, the problem of drug should solve problems both internationally and domestically, direction of solving problems should have guidelines for solving problems as follows.

1) International cooperation is major role to monitor illegal distributor along the border, to pressure and eliminate the external production sources. Moreover, development of community near border to give knowledge the dangerous of drugs to support agent and prevent the smuggling process.

2) Monitoring the drug transportation on land, sea and air by interception on the risk of the check point route or trafficable area.

3) Prevent of drug distributor with a focus on eliminate the drug gangster and government officials who neglect, corruption or get involved in drugs. Through the integration of advantage technological to investigation follow by financial investigation and digital currency. Including the suppression of drugs in a place to store narcotics in the country

4) Antidrug campaign prevention program that provides funding directly to local communities to prevent and reduce substance abuse among youth. A main objective of the program is to establish and strengthen collaboration among communities, public and private non-profit agencies; as well as federal, state, local, and tribal governments to support the efforts of community coalitions working to prevent and reduce substance use among youth.

5)Strictly control the service center such as night clubs, bars, and entertainment venues. There is a place risk of drug.

6) Prevent drug abuse in individual target appropriately and materialize by emphasize knowledge harmful of drug.

7) Addiction treatment programs are motivated to attend regular treatment sessions, have a stable place to live, are supported by family and friends, and have a get back to community and live like normal people.

## 6. Framework of action plans on drug prevention and suppression

Solution 1 Offshore production areas

1) International cooperation

2) Joint development of intelligence exchanges and proving target areas related

to drugs

Solution 2 Interception of drugs, import, export

- Prevent of drug management in border area

Solution 3 Suppression of drug trafficking groups

1) Elimination drug dealer network

2) Drug criminal database

Solution 4 Develop community

- Development of community indicators that reflect the impact of problem drug use in local communities

Solution 5 Appropriate drug prevention in each target group

- Antidrug campaign prevention program by emphasize knowledge harmful of

drug

## Solution 6 Local drug problems

- Require local solutions

## Solution 7 Addiction treatment programs

- 1) Motivated to attend regular treatment
- 2) Bring patient to community

## Recommendation

## 1. Suggestions for further study

1) The research of drug profile in Bangkok area by analyzing both by quantity and physical analysis provide a data of spread drug are increasing rapidly in the future.

2) The evidence in crime scene and is used to create a chain of custody to show what was at the scene, its location and its condition. It is an important because it can be used during a criminal court trial.

# การประชุมวิชาการนำเสนอผลงานวิจัยระดับชาติ ครั้งที่ ๓ "GRADUATE SCHOOL CONFERENCE 2019"

3) The cooperation between agency foreign countries such as DEA, FDA and ONCB to joint development of intelligence exchanges drug profile of ecstasy.

4) The study from the amount of ecstasy tablets will know the proportion of chemicals including the types of chemicals used in production, leading to the manufacturer.

5)The physical components as diameter, thickness, shape and color, providing an insight into the nature leading to the investigation of the origin of the drug.

6) The study of drug profile of ecstasy can keep as a database, will be used for prevent and support agency

7) Strictly control the service center at night to minimize the occur from narcotic crimes.

8) Development of agencies who involve narcotic division to be effective in the workplace, including instrument and knowledge.

9) Relevant agencies should create an alliance network, which is coordinating both in the public and private organize. In order to prevention and suppression of drugs.

## 2. Suggestions for further research

1) The study should be analyzed individual department of the metropolitan police division to obtain more accuracy for ecstasy drug data.

2) The study of ecstasy drug profile only use the color of sample to characteristic in the research. The next research recommends to use the physical characteristics regarding shape, thickness and diameter to expand drug profile.

3) The research of the chemical composition of ecstasy only studied the percentage of purity of drug. But did not study the other components of the chemicals used in the production of ecstasy. The next research should study the contamination between the production line, will occur unique substance in different producer.

4) This study analysis of ecstasy Characteristic in Bangkok Metropolitan Area, which is the Metropolitan Police Bureau. Further, research should study the drug profile in the region to obtain the big data for providing drug map.

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