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Prevalence of new psychoactive substances in Northeast Asia from 2007 to 2015

Junhui Lee[a], Songhee Yang[a], Yujin Kang[a], Eunyoung Han[b], Ling-Yi Feng[c], Jih-Heng Li[c,*], Heesun Chung[a,*]

[a] Graduate School of Analytical Science and Technology, Chungnam National University, Daejeon, Republic of Korea
[b] College of Pharmacy, Duksung Women's University, Seoul, Republic of Korea
[c] School of Pharmacy and Ph.D. Program in Toxicology, College of Pharmacy, Kaohsiung Medical University, Kaohsiung, Taiwan

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ABSTRACT

The proliferation of new psychoactive substances (NPS) has been a global trend in drug abuse and its regulation has been a worldwide concern. There is no doubt that it is necessary to share information related to these emerging substances between countries and continents for the effective regulation of NPS. With efforts for the efficient regulation of NPS, many studies and information have been published for the prevalence of NPS in the United States and other countries in Europe and Oceania. However, there is lack of information available for the prevalence of NPS in Asian and African countries. Therefore, this research was focused on the investigation of legal status of certain NPS in Northeast Asian countries, including China, Japan, South Korea and Taiwan, in order to provide information on the prevalence and trend of emerging NPS in these countries. The results showed that a total of 940 NPS was reported in 4 Northeast Asian countries from 2007 to 2015. Among 940 NPS, 882 NPS are legally restricted in at least one country (94%) and 96 substances were not currently under control (6%) in these countries. The number of controlled NPS that are currently controlled in all 4 countries was only 25 (or 28%) out of 882 NPS. Each substance was categorized in 9 groups according to the classification proposed by the United Nations Office on Drugs and Crime (UNODC). In Northeast Asia, the most commonly controlled NPS were synthetic cannabinoids, synthetic cathinones, and phenethylamines. It was found that Japan is the most proactive country in terms of the NPS regulation with 41% of the total number of controlled NPS in Northeast Asia, followed by South Korea (21%), China (28%), Taiwan (10%). Comparing the number of NPS newly regulated in each country every year, NPS has been broadly scheduled in 2011 and the number of scheduled NPS has dramatically increased from 2013 to 2015. It was shown that Northeast Asia is also in danger of these emerging NPS and the effective regulation across countries is important for the prevention of NPS. Also, this study will bring attention to local law enforcement in the construction of local drug crime prevention network sharing information for these controlled substances.

1. Introduction

During the last decade, the emergence of new psychoactive substances (NPS) has been proliferated on the drug market worldwide [1,2]. According to the world drug report by UNODC, it was observed that 27 million people were suffering from a total of 541 NPS as of December 2014 [3]. The term, NPS, was first coined by the UNODC for substances of abuse that may harm public health, but are not controlled in current legislations [4]. Because of the rapid transformation of these substances in their chemical structures and the continuous emergence of new substances, the complete regulation of emerging NPS is nearly impossible [1,5]. In addition, the most problematic fact of these substances is that emerging NPS are not clinically tested for their effects on human health and their safety when consumed by humans [6].

In order to respond to the proliferation of NPS, many countries have continuously regulated these substances under different national legislations due to the lack of international regulation guidelines [2,7–11]. A number of international organizations have also made efforts to respond to NPS [12]. In Europe, the European

* Corresponding authors.
E-mail addresses: jun_hightech@naver.com (J. Lee), thdgml0701@nate.com (S. Yang), vmffmt21@naver.com (Y. Kang), homepage2600@duksung.ac.kr (E. Han), joanna@kmu.edu.tw (L.-Y. Feng), jhlitox@kmu.edu.tw (J.-H. Li), hschung@cnu.ac.kr (H. Chung).

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Monitoring Centre for Drugs and Drug Addiction plays an important role to respond to NPS by operating the European Union Early Warning system in which information on the appearance of new substances is collected to assist immediate action to potential threats from NPS [13]. In addition, the World Health Organization provides information on the dependence of drugs in order to guide the regulation of drugs in different countries [14].

Although much information is now available on the prevalence and trend of NPS in European countries and the United States, there are not enough studies performed on the prevalence and regulation of emerging NPS in Asian and African countries [3]. In the case of NPS regulation, it takes time to legally control these substances due to the long process for the legislation by congress and the limited research background of new substances to support the risks for human health [15]. Therefore, NPS are generally regulated as several groups in each Northeast Asian country [16]. For example, analogues of drugs and NPS are scheduled as 'temporary drugs' when they first appear on the drug market in South Korea [17]. In Japan, each analogue is first assigned as 'designated drugs' to 'narcotic drugs' or 'psychotropic drugs' in the temporary regulation system [18]. Then, analogues are permanently scheduled as controlled substances after toxicological studies on these substances [19,20]. Similarly, NPS are regulated as 'narcotic drugs' or 'psychotropic drugs' under drugs related legislations in China [21]. In Taiwan, each substance is controlled under 'Narcotic Act' and 'Psychotropic Substances Act' with subgroups of schedule I–IV [22–25].

In this research, the investigation of legal status of certain NPS in Northeast Asian countries, including China [26–28], Japan [29], South Korea [30–36], and Taiwan [22,23], was performed to provide information on the prevalence and trend of emerging NPS. These emerging substances that are currently controlled under legislations in each country were categorized into 9 groups, such as synthetic cannabinoids, synthetic cathinones, ketamines & phencyclidines (PCPs), phenethylamines, piperazines, aminoindanes, plant-based substances, tryptamines, and other substances, based on the classification proposed by UNODC [4,37]. After classifying substances into 9 groups, the number of substances in each group was compared between countries. In addition, the number of newly reported NPS and the characteristics of the regulation on these emerging NPS in each country were compared from 2007 to 2015.

2. The overall trends and regulation of NPS in Northeast Asian countries

This research was performed on the basis of data provided by Korea Food and Drug Administration, Data Search System for New Psychoactive Substances by National Institute of Health Sciences in Japan, Embassy of the People's Republic of China in India, China Food and Drug Administration, and Taiwan Food and Drug Administration from 2007 to 2015 [23]. Fig. 1 demonstrates that a total of 940 NPS was reported in Northeast Asian countries, including China, Japan, South Korea and Taiwan. Of 940 NPS, a total of 882 NPS is currently regulated in at least one country, but 96 NPS are not controlled in any country in Northeast Asia. When the proportion of regulated NPS was compared between countries, the largest number of NPS was regulated in Japan (37%) followed by South Korea (25%), China (20%), and Taiwan (9%). Among these controlled NPS, synthetic cannabinoids (40%) are the most commonly controlled NPS followed by synthetic cathinones (22%) and phenethylamines (17%) as illustrated in Fig. 2. This tendency of NPS in Northeast Asia was similar to the global trend when compared to the 2014 annual report by UNODC [4], synthetic cannabinoids (34%), synthetic cathinones (15%), and phenethylamine (21%), and the report in East and South-East Asia and Oceania by UNODC, synthetic cannabinoids (31%), synthetic cathinones (25%), and phenethylamine (18%) [38].

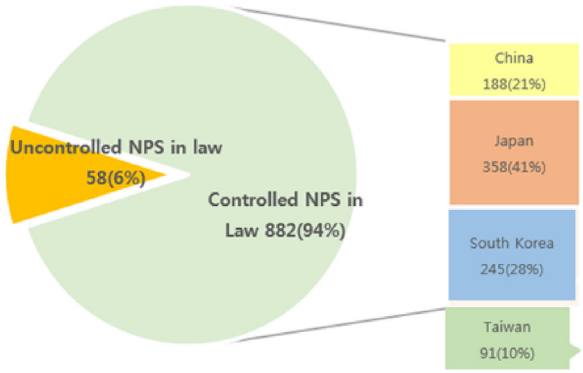

Fig. 1. The number of NPS currently regulated in Northeast Asian countries. Controlled NPS 882 (94%), not controlled NPS 96 (6%).

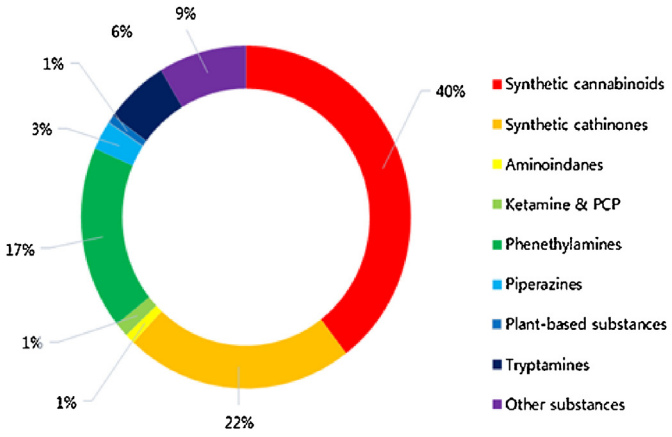

Fig. 2. The proportion of NPS controlled in Northeast Asia depending on the classification.

Fig. 3 shows the relative ratio of controlled NPS depending on the classification into 9 groups in each country. Synthetic cannabinoids are the most commonly regulated NPS with the relatively higher proportion compared to other types of NPS in all 4 countries. Although relative ratios are different between countries, synthetic cathinones and phenethylamines are still commonly controlled substances in Northeast Asia as shown in Fig. 3.

3. The status of NPS regulation from 2007 to 2015

Fig. 4 demonstrates that the number of controlled NPS has increased from 2007 to 2015 in Northeast Asian countries. It is worth to note that a larger amount of NPS has been newly regulated since 2011 with the largest number of newly controlled NPS in 2014 as shown in Fig. 4(a). Fig. 4(b) shows the number of controlled NPS in each country during the same period. In South Korea, there was more than a 3-fold of controlled NPS from 2010 to 2011 and more than 100 NPS were newly regulated in 2014 compared to 2013. Similarly, the total number of controlled NPS in 2015 was more than a 4-fold compared to 2011 in Japan. As a result of the active regulation of NPS in China since 2012, a dramatic increase of controlled NPS was shown in 2014 and 2015. In Taiwan, the number of controlled NPS has continuously increased since 2011, but the increase was not dramatic as other countries in