

Adli mercilerce 2010-2014 yılları arasında Adli Tıp Kurumu Trabzon Grup Başkanlığına gönderilen uyuşturucu madde ve yeni nesil psikoaktif maddelerin profilinin tanımlanması

A description of the profile of narcotics and new generation psychoactive substances sent by the judicial authorities to the Turkish Council of Forensic Medicine Trabzon Group Chairmanship between 2010 and 2014

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ÖZET

Bu araştırma verileri, Adli Tıp Kurumu Trabzon Grup Başkanlığı Kimya İhtisas Dairesi'nde arşivlenen 01.05.2010 – 31.04.2014 tarihleri (4 yıl) arasında gelen narkotik madde dosyalarının retrospektif olarak incelenmesi ile elde edilmiştir. Dört çalışma yılının her birinde Kenevir liste başıdır. Türkiye'de 2010 yılından itibaren her yıl sentetik kannabinoid yakalamaları artmıştır. Sentetik kannabinoidler 2013 Mayıs – 2014 Nisan arasındaki bir yılda o dönemki başvurular içinde ikinci sıradadır. Trabzon Adli Tıp Grup Başkanlığı 2012 yılı verilerine göre, 2012 yılının ikinci yarısında 8 olguda (%4,3) sentetik kannabinoid kullanımı saptanmış ve bu olgulardan birinde (%0,6) ölümün sentetik kannabinoid kullanımına bağlı olduğu kararı verilmiştir.

Anahtar Kelimeler: Uyuşturucu maddeler, sentetik kannabinoidler, kenevir, esrar, uyarıcı maddeler.

ABSTRACT

The research data were obtained through retrospective examination of narcotic substance files archived at the Chemistry Department of the Trabzon Branch of the Council of Forensic Medicine between May 1, 2010 and April 31, 2014 four years. Cannabis heads the list in each of the four study years. Seizures of synthetic cannabinoids in Turkey have increased every year since 2010. Synthetic cannabinoids were in second place in the year between May 2013 and April 2014. According to Council of Forensic Medicine figures for 2012, synthetic cannabinoid use was detected in eight cases (4.3%) in the second half of 2012, cause of death being associated with synthetic cannabinoid use in one of these (0.6%).

Keywords: Narcotic drugs, synthetic cannabinoids, cannabis, hashish, stimulating drugs.

INTRODUCTION

The word 'narcotic' derives from the Greek word 'narcos,' meaning sleep. It is used to describe substances that stupefy, stimulate or dull the senses causing hallucinations and producing feelings of alertness (1). Studies and reports on the subject of narcotic substances show that their use has increased since 2010 (2).

Heroin was formerly seized in large quantities in Turkey, 10,312 kilos being confiscated in

2006. In the same year, 12,636 kilos of heroin were seized in all of Europe, including the Russian Federation. Turkey is a principal transit route and heroin processing center and is used for the smuggling of opium, base morphine, heroin, chemical intermediates and other narcotics by international drug smugglers and dealers (3). Trabzon is an important province as it is one of the largest cities in the Northeast Anatolia region and provides forensic medicine services for the surrounding provinces through its Council of Forensic Medicine Trabzon Group Chairmanship.

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The variety of narcotic substances has increased in the last decade, and new substances with psychoactive effects have entered the market to replace the previously known and widely used narcotics. Aforementioned substances -known as new generation psychoactive substances- include synthetic cannabinoids, cathinones and phenethylamines and other substances (tryptamines, piperazines, hallucinogenic mushrooms, and herbal compounds, such as kratom and salvia divinorum, and plant materials such as harmine) (4). More than 200 new psychoactive substances have been identified since 1997 (5). Synthetic cannabinoids occupy a particularly prominent place among these relatively new substances. Substances containing synthetic cannabinoids are generally known as 'Spice' in Europe, 'K2' in the USA and 'Bonsai' or 'Jamaica' in Turkey. These are typically 'herbal cigarette mixtures' containing various different synthetic cannabinoids sprayed onto a herbal content and then smoked similarly to cannabis. These substances are widely sold in Europe, the USA and Japan and can easily be obtained online (6-8).

Herbal narcotics have long been used across the world, while there have been increasing detections of synthetic cannabinoids since 2004 (9, 10). Synthetic cannabinoids began appearing on the Turkish market in 2010 (11). They were first seen in our laboratory in 2011, since then they have been analyzed using gas chromatography mass spectrometry (GC-MS). According to the report of 2013 by the Security Directorate Smuggling and Organized Crime Branch (EGM KOM), 'bonsai' in Turkey is imported illegally from countries such as China, the USA, Turkish Republic of Northern Cyprus, Germany, Spain, Holland, Portugal, The Great Britain, Georgia and Hungary. Illegal narcotic organizations active within the country generally produce 'bonsai' together with marijuana, ecstasy and captagon (11).

The purpose of this research was to determine the trend in narcotic substances identified in materials sent for chemical analysis to the Council of Forensic Medicine Trabzon Group Chairmanship.

Table 1 Distribution of detected substances by years *

| Substances | 1 st Year No.*=364 | | 2 nd Year No.=328 | | 3 rd Year No.=362 | | 4 th Year No.=400 | |
|------------------------|----------------------------------|------|---------------------------------|------|---------------------------------|------|---------------------------------|------|
| | No.n** | % | No.n | % | No.n | % | No.n | % |
| Cannabis | 328 | 86.3 | 304 | 84.9 | 326 | 83.6 | 343 | 77.4 |
| Hashish | 31 | 8.2 | 25 | 7.0 | 12 | 3.1 | 17 | 3.8 |
| Stimulating drugs*** | 10 | 2.6 | 18 | 5.0 | 32 | 8.2 | 35 | 7.9 |
| Heroin | 8 | 2.1 | 3 | 0.8 | 2 | 0.5 | 3 | 0.7 |
| Synthetic Cannabinoids | - | - | 8 | 2.2 | 8 | 2.1 | 42 | 9.5 |
| Other**** | 3 | 0.8 | - | - | 10 | 2.6 | 3 | 0.7 |

*N: number of requests

**n: number of substances

***Stimulating drugs: Amphetamine, Methamphetamine, MDMA ,

****Other: Cocaine, Morphine, m-CPP, Other drugs.

MATERIALS AND METHODS

This study was performed by permission of the Council of Forensic Medicine Chairmanship Education and Scientific Research Commission (decision number: 08/231; date: April 8, 2014).

The research data were obtained through retrospective examination of narcotic substance files archived at the Council of Forensic Medicine Trabzon Group Chairmanship Chemistry Specialization Department between May 1, 2010 and April 31, 2014 (4 years). During the study period that lasted precisely four years, file examination was performed by counting back four years from the end of the month in which the permission for the study was granted. The research did not go back before 2010 due to concerns over errors stemming from deficiencies in file contents. Research variables that were investigated included the number of materials sent by year, month of dispatch, province of dispatch, substances identified in specimens following chemical analysis, quantities of substances and logos appearing



Figure 1: Some synthetic cannabinoids analyzed in our laboratory

on stimulant tablets. Narcotic substances were analyzed using GC-MS to determine their contents. Images of some synthetic cannabinoids investigated are shown in Figure 1.

RESULTS

The Council of Forensic Medicine received 1454 requests for analysis within the four-year study period, resulting in 1571 substances being sent for narcotic examination. Of these requests, 27.5% took place between May 2013 and April 2014 (the fourth year). Distribution by year ranged between 22.6% and 27.5%. In terms of month of request, 12.2% (N=177) took place in December, 11.7% (N=170) in September and 10.4% (N=151) in November. The lowest number of requests occurred in April, at 4.7% (N=68). Of the requests received, 76.7% were from Trabzon (N=1115), 12.1% (N=176) from the neighboring province of Rize and the remaining 11.2% (N=163) from 12 different provinces. Cannabis was the most common of the 1571 substances identified (n=1301, 82.8%), followed by hashish (n=85, 5.4%), methylenedioxy-methamphetamine (MDMA) (n=78, 5.0%), synthetic cannabinoids (n=58, 3.7%), amphetamine (n=16, 1.0%) and heroin (n=16, 1.0%). The stimulant tablets examined contained logos of makes of car, animal figures (crocodile, horse, fish, cat and butterfly), dollar signs, a ship's anchor, tops, apples, a trainer footwear brand logo, heart shapes, the formula $e=mc^2$ and the Superman logo. Methamphetamine, 1-(3-chlorophenyl) piperazine hydrochloride (m-CPP), codeine, morphine and cocaine were detected in only two specimens each (0.1% for each), and MDA in only one specimen. Ten different drugs (alprazolam, mirtazapine, biperiden, clonazepam, phenobarbital, nitrazepam, pethidine, tramadol, trazodone and metoprolol), some the subject of green and red prescriptions, were identified. Distribution of narcotic substances identified by year is shown in Table 1.

Synthetic cannabinoid was detected in 58 (3.7%) specimens over the four-year study period. The most common form was identified as AM-2201 (n=23), constituting approximately half of the synthetic cannabinoids (39.7%). This was

followed by XLR-11 in 10 specimens (17.2%). Synthetic cannabinoids detected and combinations thereof are shown in Table 2. An additional ingredient was detected in only one of the 58 synthetic cannabinoids examined, and that was identified as tobacco.

DISCUSSION

Identification and regular recording of the chemical structures of substances obtained is of great importance in the fight against drug addiction. This will make it possible to determine substance profiles and annual trends. Determination of substance profiles is also important in terms of identifying courses of action for the forces of law and order, the judiciary, forensic medicine personnel, educational institutions and civil society organizations engaged in the fight against drugs.

Table 1 shows seizures of , heroin in 2010-2014. This indicates that in addition to being an important transit route for narcotics, Turkey is also making significant progress in the fight against them (12, 13). The detection of some quantity of heroin in each investigation period in our study is therefore not surprising.

Cannabis was identified as the most common substance in terms of numbers of requests for analysis to the Council of Forensic Medicine Trabzon Group Chairmanship in the previous four years. This finding is compatible with the results of the Center for Drugs and Drug Addiction (TUBİM) Substance Use in the General Population Research (1). Cannabis heads the lists for annual distribution in each of the four study years, as shown in Table 1.

Stimulating drugs occupied second place among requests for analysis made in 2012. However, these were subsequently overtaken by synthetic cannabinoids in 2014. This is compatible with the rest of the world, as stimulating drugs occupied a prominent place in the Global Drug Survey for 2014. In addition, the European Drug Report has reported an increasing use of ecstasy powder and pills. This trend also emerged as a significant finding in our study (14, 15).

Table 2: Synthetic cannabinoids and combinations thereof detected in the study

| Synthetic cannabinoids | Number of detections |
|------------------------|----------------------|
| AM-2201 | 23 |
| XLR-11 | 10 |
| 5-F-AKB-48 | 4 |
| JWH-122 | 3 |
| AB-FUBINACA | 3 |
| JWH-210 | 2 |
| JWH-018 | 2 |
| UR-144 | 1 |
| JWH-251 | 1 |
| JWH-081 | 1 |
| PB-22 | 1 |
| MAM-2201 | 1 |
| AM-2201+JWH 251 | 1 |
| JWH-122 + JWH-210 | 1 |
| JWH-018 + JWH-122 | 1 |
| AM-2201 + XLR-11 | 1 |
| AM 2201+ 5-F-AKB-48 | 1 |
| MAM-2201+ 5-F-AKB-48 | 1 |

Analysis of our findings in terms of synthetic cannabinoids elicited striking conclusions. Detections of synthetic cannabinoids increased every year (Table 1). Detections of synthetic cannabinoids were in second place with respect to the requests received in 2014. This may be due to an increase of synthetic cannabinoids in society and therefore to an increase in seizures by the law enforcement agencies.

According to the figures of Council of Forensic Medicine for 2012, synthetic cannabinoid use was detected in eight cases (2.1%), cause of death being associated with synthetic cannabinoid use in one of them. Additionally, synthetic cannabinoids have been detected in materials sent

to our Group Chairmanship Chemistry Specialization Department for analysis from the Trabzon Group Chairmanship Morgue Specialization Department and the Samsun Forensic Medicine Branch Directorate.

Once a synthetic cannabinoid substance is banned by the United Nations and/or individual countries, narcotic organizations evade international controls by producing these substances using new formulae. Rectifying infrastructure deficiencies in chemical laboratories will increa-

se the types of synthetic cannabinoid types identified in our research and permit identification of greater varieties of synthetic cannabinoids in forensic medicine procedures.

CONCLUSIONS

This research reveals that cannabis is still the most commonly identified substance, but that the numbers of stimulant tablets and synthetic cannabinoids are increasing on an annual basis.

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