

PHARMACEUTICAL PREPARATIONS IN ILLICIT DRUG CASES

Roman STANASZEK, Wojciech LECHOWICZ
Institute of Forensic Research, Cracow, Poland

ABSTRACT: The paper covers the topic of pharmaceutical preparations in illicit drug cases. The drugs that were most frequently found in our casework were namely Proasthim, diazepam, tramadol, clonazepam, piracetam and phenobarbitone. Medicines that contain ephedrine have been the object of great interests among Polish drug addicts. Proasthim which contains ephedrine, theophylline and phenobarbitone is used as a legal source of precursors for production of illegal substance namely methcathinone. Psychotropics are the part of the polydrug scene. True drug pyramid is not just an illicit drug pyramid or a psychotropic pyramid or an alcohol pyramid, but a construction, which is built out of all these chemicals put together.

KEY WORDS: Illicit drugs; Analytical techniques; Ephedrone.

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INTRODUCTION

In Poland like in other countries consumption of medicines including psychotropic substances recently has been growing very fast. Though most of the medicaments could be purchased only in a drugstore on the basis of a physician prescription nevertheless in these times they could also be bought on the illicit drug market and even on bazaars, sometimes they are smuggled from abroad. The quality of such substances is often very poor. Many of the drug-addicted persons simultaneously use various narcotic substances for instance opiates together with psychotropic medicaments getting into so called mixed dependence. The paper is to answer the question why these medically prescribed substances should be included in a session dealing with illicit drugs.

CASEWORK SURVEY

We took into our consideration the period of 4 and a half-year from January 1995 to June 2000. The overall number of illicit drug cases in the Organic

Poison Section was 1040 which is about 20% of all cases we were involved in within that time period. Roughly 4% (39 cases) were those illicit drug cases in which we also found pharmaceutical preparations.

TABLE I. THE LIST OF PHARMACEUTICAL PRODUCTS MOST FREQUENTLY ENCOUNTERED IN PERIOD 1995–2000

Acetylsalicylic acid	Iron-folic
Amitriptyline	Isoetharine
Anacin	Isoproterenol
Aspartic acid	Ketoprofen
Bioxetin (Fluoxetine)	Levomepromazine
Biseptol (Trimethoprim, Sulfamethoxazole)	Lidocaine
Caffeine	Magnesium
Carbamazepine	Megastrol
Chlordiazepoxide	Metamizol
Chlorprotixen	Mianserine
Clonazepam	Nitrazepam
Clonidine	Nordiazepam
Clorazepate	Opipramol
Codeine	Ornityne
Cyclobarbitone	Paracetamol
Diazepam	Perazine
Doxepine	Piarcetam
Dublex	Pridinol
Pyritinol	Proasthmin (ephedrine, phenobarbitone, theophiline)
Estazolam	Promethazine
Chlorpromazine	Sylimarol (herbal product)
Fenmetrazine	Thioridazine
Fenobarbitone	Tramadol
Clomipramine	Zinc for acne
Hydroxyzine	Zopiclone
Ibuprofen	

In the Table I there is a list of pharmaceutical preparations found during this earlier mention period. It does not cover all analysed drugs but the most frequently occurring. The list includes the variety of preparations: over-the-counter drugs like aspirin but also psychotropic drugs like fluoxetine (Prozac), clonazepam and others. All those drugs belong to various pharmaceutical classes: non-steroidal anti-inflammatory drugs (NSAIDs), tranquillisers, antihistamines, sedatives, local analgesics, anticonvulsants, narcotic analgesics and anabolic steroids (Table II).

TABLE II. THE PHARMACOLOGICAL CLASSES OF ENCOUNTERED MEDICAMENTS

1. NSAIDs: acetylsalicylic acid
2. Antihistamines: promethazine
3. Sedatives: phenobarbitone, cyclobarbitone
4. Tranquillisers: clonazepam, nitrazepam thioridazine
5. Local analgesics: lignocaine
6. Anticonvulsants : carbamazepine
7. Analgesics: tramadol, pethidine, paracetamol
8. Steroids: megestrol, metanabol

The drugs that were most frequently found were namely Proasthmin – a preparation, which is a mixture of ephedrine, phenobarbitone and theophylline, diazepam often added to liquid “kompot” (Polish heroin) [3], tramadol, clonazepam, piracetam and phenobarbitone.

Street drugs on the illicit market are subject to frequent and extensive process of adulteration and dilution so medicines are used for those purposes. They are also used:

- as a remedy for overdose,
- to hide the symptoms of being intoxicated,
- to false results of body fluids drug tests,
- to get “high” (poly-drug users),
- to improve mind performance,
- to deal and get money for buying illicit drugs,
- for crime purposes (homicide, rape, robbery),
- as a source of precursors,
- for treatment, according to a physician prescription.

Some of the medicines, especially psychotropic drugs can obviously be overdosed or can cause the so-called mixed dependence. It is known that even four to six weeks’ exposure to benzodiazepines can put a patient at a risk of dependence. What is also worrying is the evidence that withdrawal symptoms can occur after therapeutic or “normal” dose exposure to benzodiazepines.

Some drugs may be the source of precursors used for production of illicit drugs. Ephedrine is an example of such situation. A legal medicinal drug can be transferred to an illegal substance [2]. First such case happened in 1996 during the analysis of the urgent emergency case from toxicological clinic. It was a case of intoxication with a liquid substance found near the patient in a syringe. The liquid was surprisingly transparent in spite of usual Polish heroin look. During analysis it was found that the mixture contains 3 drugs: methcathinone (ephedrine), theophylline, phenobarbitone and some traces of ephedrine.

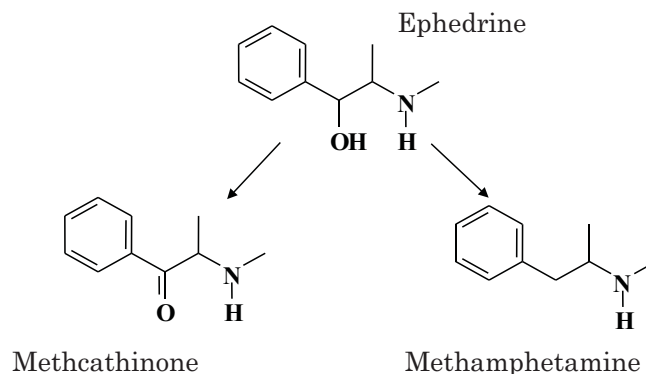


Fig. 1. Synthesis of methcathinone [2].

Medicines that contain ephedrine have been the object of great interests among Polish drug addicts. One of these medicines is the antiasthmatic drug named Proasthim. It contains ephedrine, theophylline and phenobarbitone and is used as a legal source of precursors for production of illegal substance namely methcathinone so called ephedrone in a process of ephedrine oxidation with potassium permanganate. Reduction of ephedrine that is much more difficult to perform leads to metamphetamine. Ephedrone (methcathinone), called by drug addicts “jeff” or “cat” is a derivative of phenylpropane. Problems caused by this compound, its action and poisoning cases were discussed in several papers. In Belarus and Russia in the 90s, the cases of ephedrone production and over a dozen its fatal overdoses were also noted. The production and use of this drug came into fashion also in Poland [2].

INTERNET – THE SOURCE OF INFORMATION ON DRUGS

Internet is nowadays a great source of information for drug addicts and none-users as well as for us too [1]. They share the information how to use pharmaceutical preparations (how much to take to get “high” and to avoid overdose), where and how to get them, which are to use when overdose happens, which are to be avoided etc.

TABLE III. PHARMACEUTICAL PRODUCTS AND DRUGS OF ABUSE “ADVERTISED” FOR MOOD AND PHYSICAL IMPROVEMENT [3].

“Mind improvers”		“For overdose”
Amfepramone	Fenetylline	Pentetrazol
Amphetamine	Fipexide	Nikethamide
Amphetaminil	Meclofenoxate	
Aspartic acid	Mefexamide	
Butacaine	Methamphetamine	
Caffeine	Minaprine	
Cocaine	Pemoline	
Cogitum	Phendimetrazine	
Cyprodenate	Phenmetrazine	
Deanol acetamidobenzoate	Piracetam	
Dexamphetamine	Prolintane	
	Propylhexedrine	

ANALYTICAL TECHNIQUES

Pharmaceutical preparations are usually tablets, capsules and ampoules but sometimes they are mixed and powered. Literature information, containing characteristics of the appearance (colour, shape, weight, marks etc.) of the tablet or capsule, is very helpful in identification when the tablet or capsule is registered as a pharmaceutical preparation in Poland. But the proper analysis requires analytical procedures. These drugs are analysed in similar manner as “powder illicit drug”. If it is a simple drug we may use simple analytical methods like thin layer chromatography (TLC). If the case is more complicated GC/MS with standard routine conditions is used. We use ion trap GC/MS in the electron impact ionisation mode. Obtaining full mass electron spectra and comparing them with the reference library is sometimes sufficient for identification. If any doubt and for confirmation we apply high-pressure liquid chromatography (HPLC) system with diod-array detection (DAD) [4]. We use MTSS – Merck Tox Screening System that is a designed screening system for drugs and metabolites.

TABLE IV. METHOD USED FOR IDENTIFICATION OF PHARMACEUTICAL PREPARATION

GC/MS	HPLC (MTSS)
Instrument: GC/MS-ITD Magnum Ion Trap	Instrument: LaChrom D-7000 System with DAD (Merck-Hitachi)
System: Varian/Finnigan Mat.	According to Merck Tox Screening System (MTSS)
Column: F5CC DB-5MS, J&W Scientific, L – 30 m, ID – 0.25 mm FT – 0.25 μ m	Column: LiChroCART 125x4 LiChrospher 60 RP select B (Merck)
Carrier gas: helium (flow = 1.2 ml/min).	Mobile phase: A – acetonitril B – 25 mM triethylammonium phosphate buffer
GC temperature: 75°C (1 min), 75°C– 75°C (ramp 25°C/min), 275°C (3 min)	Gradient: 0 min. 0% A 100% B 30 min 70% A 30% B 33 min 0% A 100% B 43 min 0% A 100% B
Multiplier voltage: 1150 V	Flow rate: 1 ml/min
Mass scan: full scan 50-450 amu	
Ionisation mode: electron impact (70 eV)	

CONCLUSION

Persons who by any reckoning have “drug problems” and who are, for instance, heavily involved in the misuse of amphetamine, cocaine or heroin, are likely to be mixing a number of psychotropics with these illicit substances. They do so “to get a better buzz”, to dampen the excessive excitement induced by stimulants or to counteract the sedation produce by an opiate. They do so because these diverted medicines are easily available and because someone offered this “handful of pills”. Psychotropics are therefore part of the polydrug scene. It is very possible that the true drug pyramid is not just an illicit drug pyramid or a psychotropic pyramid or an alcohol pyramid, but a construction, which is built out of all these chemicals put together.

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