Legal issues of addiction assessment: the experience with hair testing in Greece

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ABSTRACT: The purpose of this paper is to present Greek law and legislation for crimes and felonies regarding drugs of abuse and the interpretation of hair testing results with respect to Greek law. Details (such as the process, the decision and the competence of the Court, the police record, the indictment, the expert reports, the defendant’s individuality, the crimes and the penal confrontal and many others) from legal cases related to toxicomany and its judicial verification were collected and analysed. Laboratory data of cases concerning the laboratory evaluation of toxicomany in addicts and also occasionally the legal course of cases with addict defendants are presented. In four representative cases segmental hair analysis proved that, for as long as the individuals were imprisoned, findings with drug substances corresponding to that period were lesser or practically absent compared with samples corresponding to the time out of prison, which showed increased drug abuse. Hair analysis provides information on chronic exposure rather than acute poisoning. Its detection window varies from some days to months or even years. The procedure that the law lays down in many cases is insufficient and in most cases impossible to abide by. When the medical examiner is not able to decide if the claim of toxicomany is real, segmental hair analysis may be the only way to prove it. In other cases where the medical examiner is able to diagnose the addiction, a segmental hair analysis is necessary because it can show long-term drug abuse.

KEY WORDS: drug addiction; legal issues; segmental hair testing; drug concentrations.

Introduction

Criminality about drugs in Greece is confronted with Law 1729/1987. According to this law, addicted drug users encounter lower penalties if the Court is convinced about the defendant’s drug addiction. The claim of toxicomany is maintained by the defendant or comes to light from the documents in proof of the file of proceedings. In addition, if the Court rejects the claim of toxicomany, the defendants probably will be punished with felony penalties. The confirmation of the addiction is made according to Ministerial Enactment 3982/1987 (Article 13§2 of Law 1729/1987), which institutes the procedure for this purpose. Adjuvant means to collect evidence of toxicomany are the laboratory toxicological examinations, such as searching for drug substances in biological samples, either conventional (e.g. urine, blood) or non-conventional (e.g. hair) (Tsatsakis, 2002).

At present, toxicological analysis of non-conventional biological samples (e.g. hair, saliva, sweat, sperm) has significant value and many applications in several areas of medical, forensic and environmental science (Sachs, 1997; Tsatsakis and Tzatzarakis, 2000; Cone, 2001; Tsatsakis et al., 2001). These samples may provide important additional information and present certain advantages (e.g. they are time efficient practical, cost-effective, non-invasive and a second sample can be obtained) over conventional biological samples (Pepin and Gaillard, 1997; Baez et al., 2000; Rivier, 2000).

Of the non-conventional biological samples, hair can provide the most vital information, with sectional hair analysis being the most widely used. The main advantage of hair is that it retains information trapped for prolonged periods of time (Tsatsakis and Tzatzarakis, 2000). Drug stability in hair has been studied in 4000-year-old mummies, in which small amounts of cocaine metabolites were found (Baez et al., 2000). This is attributed to the absorption and trapping mechanism that exists in the hair, taking place during keratinization of the newly formed cells. Through this mechanism, substances in the blood-circulation system, which enter the hair via the follicle, are trapped and retained in specific parts of the hair. Sweat and sebaceous glands also play a basic role in the process of drug deposition in hair. Water-soluble drugs, excreted into sweat and sebum from the skin, also may be incorporated in the hair. The removal of drugs depends
upon several variables, such as gels or solutions used to wash or treat the hair.

Several studies have provided contradictory evidence on the dose–response relationship between drug use and drug titres in the hair (Staub, 1993; Pepin and Gaillard, 1997). Despite these concerns expressed by the scientific community with respect to the role of hair drug-testing and the questions concerning scientific issues of hair testing that are still to be answered, hair testing has been applied in forensic investigations, historical research, autopsy, adoption and protective cases, exclusion of evidence, serial criminal cases, rape cases, doping control, as well as other scientific and/or legal cases (Tsatsakis, 2000; Ricossa et al., 2000). The main use of hair analysis with respect to judicial applications lies within the frames of criminal and civil law. In Greece specifically, expertise reports based on sectional hair analysis are used in criminal cases, the majority of which are related to infractions of the narcotics legislation.

Growth rates of the hair vary with a general accepted mean of 1 ± 0.3 cm per month (scalp crown 0.35 mm per day, vertex 0.44 mm per day, beard 0.27 mm per day, eyebrow 0.16 mm per day, axilla 0.30 mm per day, chest 0.40 mm per day, thigh 0.20 mm per day). The segmental analysis of human hair has been used as a helpful tool in forensic cases (Claeuwaert et al., 2000; Mahl et al., 2001; Tsatsakis, 2001; Berti et al., 2003). The main use of hair analysis with respect to judicial applications lies within the frames of criminal and civil law. In Greece specifically, expertise reports based on sectional hair analysis are used in criminal cases, the majority of which are related to infractions of the narcotics legislation.

The purpose of this paper is to present Greek law and legislation for crimes and felonies regarding drugs of abuse and particularly the interpretation of hair testing results with respect to Greek law. In particular, our results during the last year concerning the laboratory evaluation of toxicomany (addiction) in drug users are discussed.

**Materials and Methods**

**Legal Sources**

The expert evidence of toxicomany takes place under the legislative regime that Law 1729/1987 and the Ministerial Enactment 3982/1987 determine. This Ministerial Enactment, which consecrates the common scientific criteria for the diagnosis of dependence, was published under the delegation of Article 13 of the above-mentioned law. Furthermore, the conduction of the experts’ reports is determined by Articles 177, 178, 179 and 183–208 of the Code of Penal Procedure. Matters of the judicial application of an expert report are related to Articles 87§1 and 26§3 of the Constitution. In addition, 70 legal cases related to the anitnarcotics legislation and especially to the matter of toxicomany and its judicial verification in Crete were studied. Information from each file about the process, the decision and the competence of the Court, the police record, the indictment, the expert reports, the defendant’s individuality, the crimes and penal confrontal and many others were classified into 11 groups. Conclusions on addiction, and especially about the conduction of segment hair analysis and its evident value, are presented.

**Sampling**

The hair samples were collected from persons with private interest (to prove chronic drug abuse or no use), from imprisoned persons accused of possession or use of drugs following a district attorney’s order or from fatal cases following the order of a medical examiner.

Head, pubic, axillary and chest hair also were collected from each patient. In some cases sampling was performed in prison. In all cases, 100–800 mg of hair was received and kept in aluminium foil or a paper envelope at room temperature. Patients’ details (name, age, sex, profession) and full drug use history were recorded.

**Deoxyribonucleic Acid Analysis**

Hair samples are used also for DNA profiling. The identification of variable characteristics at one or more loci in an individual’s DNA, and a comparison of those characteristics with other DNA samples to determine
whether they could have a common origin, is very strong evidence that could be useful to ensure justice. The DNA was extracted from the hair shaft and a DNA profile was established by using several short tandem repeat (STR) loci (Lins et al., 1996).

**Extraction and Sample Preparation Method**

Hair samples are washed twice in 10 ml of water and 10 ml of methanol to remove as much external contamination as possible. The hair is cut in small segments 2–3 mm long with scissors and 50–100 mg of each sample is homogenized in a ball-mill homogenizer (Bioblock Scientific, BP.111-F67403, ILL KIRCH CEDX) for 5 min until powdered. Two millilitres of methanol is added and the sample is left to incubate at 42 °C for 4 h in an ultrasonic water-bath and then centrifuged for 5 min at 4000 rpm. The supernatant is removed and evaporated under a gentle stream of nitrogen. The residue is: dissolved in 50 µl of methanol and measured using gas chromatography–mass spectrometry (GC–MS) for cannabis and cocaine or derivatized with 50 µl of bis(trimethylsilyl)trifluoroacetamide (BSTFA) at 80 °C for 30 min and measured using GC–MS for opiates; dissolved in 0.2 ml of 0.9% sodium chloride solution and measured in Abbott ADx. The mean recoveries following the above extraction method are: 76.6% for 6-monoacetylmorphine (6-MAM), 91.9% for benzoylecgonine and 78.5% for Δ⁴-tetrahydrocannabinol.

**Instrumental Method**

Immunoassay techniques (Abbott) were used for the initial screening of the drugs. Electron ionization mass spectrometry was performed on a Finnigan Mat (CAT) instrument coupled to a Finnigan Mat gas spectrometry was performed on a Finnigan Mat (CAT) initial screening of the drugs. Electron ionization mass spectrometry was performed on a Finnigan Mat (CAT) for cannabinoids the column temperature programme was 140 °C for 1 min, which was then increased to 310 °C at 30 °C min⁻¹ and held at 310 °C for 15 min. The retention time of cannabidiol was 8.30 min, of Δ⁴-tetrahydrocannabinol (THC) was 8.68 min and of cannabino was 8.99 min. The ion for cannabidiol was m/z 231, for THC were m/z 231, 299, 314, for cannabino were m/z 238, 295, 310. For cocaine detection the following temperature programme was used: the initial temperature was 100 °C for 4 min, which then was increased to 310 °C at 10 °C min⁻¹ and held at 310 °C for 10 min. The retention time of cocaine was 21.95 min (m/z 82, 182), of methylecgonine was 13.44 min (m/z 82, 96) and of benzoylecgonine (BE) was 26.07 min (m/z 82, 124, 168).

**Results**

Hair analysis is a subject of growing interest for drugs of abuse because it provides information on chronic exposure rather than acute poisoning. Its detection window varies from some days to months or even years and only the length of the hair limits it. Methanolic extraction of the drugs allows cannabis, morphine and cocaine to be extracted simultaneously from the same sample with no drugs being converted to other compounds, as can be the case for basic or acidic extraction. Methanol extraction can be used also for the determination of other compounds, such as pesticides (Tsatsakis and Tutudaki, 2004).

Table 1 presents our results of the last six years: the range and the mean concentration of positive samples for cocaine, morphine and THC for the 124 investigated cases and the number of negative samples for cocaine, morphine and THC in the last 6 years:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Number of samples</th>
<th>Range (µg mg⁻¹)</th>
<th>Mean concentration of positive samples (µg mg⁻¹)</th>
<th>Number of negative samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocaine</td>
<td>124</td>
<td>0.2–560</td>
<td>35.98</td>
<td>64 (51.61%)</td>
</tr>
<tr>
<td>THC</td>
<td>124</td>
<td>0.01–3.1</td>
<td>0.65</td>
<td>57 (45.97%)</td>
</tr>
<tr>
<td>Morphine</td>
<td>124</td>
<td>0.2–96.8</td>
<td>10.87</td>
<td>80 (64.5%)</td>
</tr>
</tbody>
</table>

* Positive samples for cocaine (cocaine > 0.2 ng mg⁻¹, BE > 0.2 ng mg⁻¹), morphine (morphine > 0.2 ng mg⁻¹, 6-MAM > 0.2 ng mg⁻¹) and THC (THC > 0.01 ng mg⁻¹).
cocaine (cocaine and BE), morphine (morphine or 6-MAM) and THC for the 124 investigated cases and the number of negative samples.

Segmental Analysis of Representative Cases

Four cases were selected on the basis of length of hair and the positive low or high drug levels. Analysis of such case provides significant information and the interpretation is interesting.

Case 1

Figure 1 presents the drug hair profile of a 25-year-old woman. She claims to be an abuser of cocaine and heroin for the last 5 years. The total length of the collected head hair sample was 24 cm, which was cut into eight segments. Cocaine and morphine were detected in all segments. Total morphine concentration (morphine, 6-MAM) ranged from 2.29 to 6.62 ng mg$^{-1}$ (mean value = 3.47 ng mg$^{-1}$) and cocaine concentration ranged from 0.29 to 1.24 ng mg$^{-1}$ (mean value = 0.69 ng mg$^{-1}$). The levels of cocaine were almost stable for the total of the examined period (24 months). Also, total morphine concentrations in the first and second segments were significantly higher than the other segments, indicating heavier heroin abuse for the corresponding 6-month period compared to the rest of the examined period of abuse. These results indicate systematic (chronic, 24 months) abuse of heroin and cocaine. According to these data (concentrations of the abused substances in hair segments and other morphological characteristics of the obtained samples), the severity of abuse for cocaine and heroin for the total examined period may not be considered to be heavy. In contrast, the abuse of cannabis products is presented to be lower (~0.03–0.07 ng mg$^{-1}$) for the first 6-month period in comparison to the rest of the examined period (~0.19–0.35 ng mg$^{-1}$). Moreover, these data suggest heavy cannabis use (Jurado et al., 1996).

Case 2

This case concerns a 26-year-old man who has been imprisoned for the last 9 months. Head hair samples were collected, with a total length of 42 cm (total sample). According to his own statement, he has been an abuser of cocaine and cannabis for the last 5 years. The hair profile for cannabis and cocaine for the total examined time period (approximately 42 months) is presented in Fig. 2. The concentration in hair segments before his imprisonment ranged from 0.03 to 0.33 ng mg$^{-1}$ (mean value = 0.18 ng mg$^{-1}$) for cannabis and from 0.4 to 1.73 ng mg$^{-1}$ (mean value = 0.87 ng mg$^{-1}$) for cocaine. Hair drug concentrations varied significantly during these 42 months. The fluctuation in the observed values indicates more or less intense use at certain times. The concentrations of cocaine and cannabis show a decreasing trend, which is much more evident in the segments corresponding to the time just before imprisonment and become almost zero during imprisonment (Fig. 2). The data show systematic (chronic) abuse of cocaine and cannabis products and are associated with controlled cocaine abuse (not heavy) and considerable cannabis abuse (Jurado et al., 1996).

Case 3

This case concerns a 41-year-old man imprisoned for the last 16 months. He claims to have been an abuser...
of cocaine, heroin and cannabis for the last 10 years. The total length of head hair sample obtained was ca. 40 cm, representing drug abuse of a corresponding 40 months. The analysis was performed in 5-cm segments and 2-cm segments, each segment corresponding to approximately 5 and 2 months of past exposure. Figure 3 depicts the results obtained from the consequent 5-cm segments.

The analysis of segments corresponding to the period before imprisonment shows concentrations of cannabis ranging from 0.01 to 0.16 ng mg\(^{-1}\) (mean value = 0.05 ng mg\(^{-1}\)), concentrations of cocaine from 0.86 to 24.42 ng mg\(^{-1}\) (mean value = 11.38 ng mg\(^{-1}\)) and concentrations of total morphine from 0.3 to 3.99 ng mg\(^{-1}\) (mean value = 1.87 ng mg\(^{-1}\)) for the 5-cm segments. The data indicate systematic cocaine, heroin and THC abuse.

The decrease of drug concentrations is more evident in segments 1–3, corresponding to 15 months of imprisonment. The drug concentrations approach zero levels during this time. The analysis of the 2-cm segments resulted in a wider concentration range owing to possible heavy drug abuse in the entire periods of times. Conclusively, the data for cocaine and THC indicate heavy abuse but such a conclusion cannot be stated for heroin.

Case 4

This case concerns a 40-year-old man imprisoned for ca. 2 months before sampling. According to his statement,
he has been an abuser of cocaine, heroin and cannabis for the last 6 years. The total length of head hair was ca. 15 cm, corresponding to ca. 15 months. Beard hair also was collected while he was in prison. Analysis was performed in 3-cm segments and 1-cm segments, corresponding approximately to 3 and 1 months of past exposure, respectively. Analysis of segments corresponding to the period before imprisonment showed concentrations ranging from 0.02 to 0.66 ng mg⁻¹ (mean value = 0.24 ng mg⁻¹) for cannabis, from 1.68 to 137.83 ng mg⁻¹ (mean value = 43.16 ng mg⁻¹) for cocaine and from 3.06 to 15.10 ng mg⁻¹ (mean value = 7.46 ng mg⁻¹) for total morphine. The considerable concentrations of drug (cocaine, 1.56 ng mg⁻¹; THC, 0.06 ng mg⁻¹; morphine, 8.18 ng mg⁻¹) in the beard sample grown during the period of his imprisonment is due to rebound from the tissues to the blood circulation and consequently to hair.

The examined person is characterized as a heavy drug abuser owing to the high levels of drug concentrations in segments of hair corresponding to the time when he was not in prison (Fig. 4). The detection of traces of drugs in hair during imprisonment could be attributed to the delayed excretion of the compounds from other tissues and blood into hair.

Data from cases 3 and 4 indicate that hair sampling from heavy drug abusers is valid even when it occurs several months after the beginning of imprisonment. Data from all the cases represent the drug history profile of each patient. The detection window for drug abuse varies from some days to months or even years, limited only by the length of the hair.

**Discussion**

The validity of segmental hair testing results may be affected by environmental contamination in terms of quantitation of the measured concentrations. This implies the possibility of someone exposed to a drug being characterized mistakenly as a drug user. Such an exposure may be due to active use, passive inhalation or even dermal contamination. However, a laboratory-confirmed exposure alone cannot be associated with addiction and consequently it cannot provide an excuse for the examined person to get attenuated benefits (extenuations) resulting in lower grade sentences at the Court. In particular, head hair can be exposed to environmental pollution and so-called drug dust (Cone and Wang, 1995). The scientific community takes into account environmental exposure during the process of analysis (preparation of the hair sample includes a decontamination stage) and also during evaluation of the results (Tsatsakis and Tzatzarakis, 2000). The factors that influence the process of external contamination depend on the physicochemical properties of the substance under investigation, the anatomical, structural and morphological properties of the hair and the environmental conditions (such as temperature, humidity, pollution and competitive bonding) and have been examined to a sufficient extent to warrant validation of the analysis and further evaluation (Kidwell and Black, 1996; Tsatsakis and Tzatzarakis, 2000). With regard to evaluation of the concentrations levels, several scientifically based reports refer to correlations of drug concentrations in hair and consumed doses (Staub, 1993; Huestis, 1996; Jurado et al., 1997; Pepin and Gaillard,
was used to assist the fact-finding process. A New York publicized cases in which forensic drug testing in hair ancestry throughout the USA. There have been some well-ow out of the hair (especially LSD) (National Medical hair was treated harshly, e.g. bleached, coloured; or the of drug (especially amphetamines, LSD and PCP); the hair to be detected, depending on hair colour and type the hair examined did not cover the time in which drug did not use the drug in a chronic/repetitive manner during the time period represented by the hair length examined. If no drug is detected then: the subject was a chronic user of the drug but most likely exposed to the drug in a chronic/repetitive manner during the time period represented by the hair length. If hair testing gives positive results, the individual was mostly exposed to the drug in a chronic/repetitive manner during the time period represented by the hair length examined. If no drug is detected then: the subject did not use the drug in a chronic/repetitive manner during the time period represented by the length of hair examined; the subject was a chronic user of the drug but the hair examined did not cover the time in which drug use took place; not enough drug was incorporated into the hair to be detected, depending on hair colour and type of drug (especially amphetamines, LSD and PCP); the hair was treated harshly, e.g. bleached, coloured; or the drug may have been present but degraded or was washed out of the hair (especially LSD) (National Medical Services, Hair Information Packet).

Forensic hair testing has found widespread acceptance throughout the USA. There have been some well-publicized cases in which forensic drug testing in hair was used to assist the fact-finding process. A New York appellate court agreed with a trial court’s discovery policy, permitting hair drug testing for cocaine to be used in an examination to uncover evidence of the mother’s habitual drug use (Mieczkowski et al., 1993).

**Greek Law**

For the defendant’s penal confrontal, it is of significance for the court to diagnose whether the defendant is a drug addict (Article 13 of Law 1729/1987) or a simple user (Article 12 of Law 1729/1987). Amid the differences of these two statuses, the entire Greek antinarcotics legislation is formatted. The basic crimes (Article 13§4 a,b of Law 1729/1987) that a drug addict commits are offences (they are punished with imprisonment from 10 days to 5 years). Even in the -admissibly- heavier trading crimes (Article 13§4c of Law 1729/1987) the penal confrontal is more indulgent. However, when a non-addict defendant commits violations of Law 1729/1987, the purpose of trade and profit is latent in the basic crimes (Article 5 of Law 1729/1987). Consequently, they are always considered felonies with the exclusion of crimes in which the element of occasional, temporal and solely personal drug use is being contained (Article 12 of Law 1729/1987). These are punished with incarceration from 5 to 20 years if it is temporary or from 5 years to life if it is lifelong (Article 52 of Penal Code). In most cases when the defendant is arrested with a large quantity of drug substances (meaning that this quantity is too big to justify personal use), the purpose of trading drugs is concluded and it is to his/her advantage to claim and prove being addicted to drugs so as to take the lower penalties. Otherwise, it is almost impossible to convince the Judge that the drugs are for personal use only and not for trade. Under these circumstances the defendant tries to be characterized as a drug addict.

In the basic crimes of use, accession, possession and cultivation for personal use the law regards the addict offender as insane. For the remaining offences, the law threatens the addict offender with diminished penalties, because it regards the offender as a person with dejected imputation. This difference is not incomprehensible. The addict person performing acts related to the accession and use of drugs, which he needs to affront the addiction, is insane and acts under his absolute exigency for the drug. In the rest of cases, addiction is an inhibitory element for valuation of the demerit of his attitude (Pavlou, 2002), even though addiction does not eliminate all ability to judge whether to act or to abstain from the crime.

Drug substances fall under four groups (Article 4 of Law 1729/1987). It should be pointed out that each of the controlled substances from groups I–IV is equally forbidden for possession, use or trade without any differentiation (e.g. the law equally penalizes the possession and use of heroin, cannabis products and ecstasy tablets). Basically, Judges attribute stronger punishment for the
possession/trade/use of the so-called heavy drugs such as heroin within the frames of their jurisdiction (unpublished data). According to the law (Articles 79–87 of Penal Code), the jurisdiction of the Judge in the determination of sentence is wide.

The Examining Magistrate and the Court may (or not) order examination of the defendant by experts (Article 13 §2 of Law 1729/1987) if the defendant propounds the contention of toxicomany or this parameter comes into question during the procedure. The potential character of this order means that the Court can accept the existence of toxicomany, evaluating other conclusive evidence (Articles 177 and 179 of Code of Penal Procedure). In addition, the examination can be ordered constrainedly by the Examining Judge or the investigating officers (usually the Police Officers of Drug Enforcement), if the defendant confesses to be a drug addict within 24 h of arrest or during his/her first pleading. In this case the examination is ordered within 24 h and takes place as soon as possible (Article 13§3 of Law 1729/1987).

The special centres of drug-addiction purgation, the psychiatric clinics and the laboratories of forensic service perform the examination. In exceptional cases the examination is allowed to be performed by three doctors, one of who should be a psychiatrist. These aim to clarify the existence and extent of dependence. After the examination a report is submitted to the Examining Judge or District Attorney. The report must contain data concerning the dependence of the person on a certain substance, the daily dose required to avoid withdrawal syndrome and the influence of the drug on the behaviour and conscience of the addict. Finally, they should determine whether the addict is able to terminate the drug abuse on his/her own and suggest a suitable treatment.

From unpublished personal data it comes to light that in most cases the examination is clinical and is conducted by a medical examiner who recommends a toxicological analysis of urine or blood. In only very few cases does a forensic psychiatrist conduct an examination. In the case of opponent examinations, the Court should decide which is the most vital and with special justification to reject the other (see below).

The Procedure

The examination is conducted with the procedure that Ministerial Enactment 3982/1987 consecrates, which contains the common scientific criteria for the diagnosis of dependence. In Article 1 the assessment of narcotics use includes laboratory examination (urine or blood sample collection no later than 48–72 h after the last drug administration under controlled conditions and toxicological analysis of body fluids) and clinical examination and observation in a public hospital or correctional institution for at least 5 days. During clinical examination, scars due to vein puncturing and other evidence indicating drug abuse are noted. Symptoms of withdrawal syndrome are sufficient evidence for drug addiction and are treated as indicated by relevant instructions from the Ministry of Health. Full history must be obtained, especially when no withdrawal syndrome is apparent.

According to Article 2 the patient is characterized as an addict when at least three of the following nine criteria are fulfilled:

(i) he consumes substances in larger quantities or for a longer period than originally anticipated;
(ii) he has tried unsuccessfully to stop or reduce the drug use;
(iii) he spends a lot of time trying to obtain the drug, use it or be under the influence of the drug;
(iv) he exhibits intoxication or withdrawal symptoms while expected to fulfill important obligations at work, school or home;
(v) he undertakes dangerous activities (e.g. driving of a car);
(vi) he abandons important social, professional or entertaining activities due to drug abuse;
(vii) he continues the drug abuse even though he is aware of a continuous or periodic social, psychological or health problem caused by the drug;
(viii) he exhibits increasing tolerance to the substance and therefore needs larger amounts to reach the desired effect;
(ix) he exhibits withdrawal symptoms and uses the substance to avoid them.

The expert reports are drawn up according to Articles 148 and 198 of the Code of Penal Procedure. It contains an exhaustive report of all the evidence and criteria of the previous articles, and indicates the most appropriate supportive or therapeutic measures to be taken (Article 3 of Ministerial Enactment 3982/1987).

The main characteristic of this procedure is that the examination was mainly clinical and medical and to a lesser degree psychiatric, although in cases with addict defendants the examination takes into account matters that reduce their blame and mainly their imputation. The medical examiners are able to evaluate the physical addiction, which is a reliable (but not the safest) criterion for the verification of psychic addiction. In addition, they are asked to estimate data that are related to the psychiatric status of the defendant and concern the future attitude of the addict or a prediction of the most appropriate therapy.

Judicial Application

The existence of opponent expert reports in the same case is occasionally feasible. In these cases, the Court should
determine which of the two or three opponent reports is going to be accepted. The Court is able to reject an expert’s report, although this sounds unreasonable, because the Judge is not obligated to follow any legal rules of proof but decides according to his judicial conscience (a.177§1 of Code of Penal Procedure). An expert’s report is not undeniable and does not have absolute probatory force. In addition, it is regarded as evidence under evaluation, as far as credibility is concerned. (Androulakis, 1994). If the Court rejects an expert’s report, it should justify this opponent conviction with special justification (e.g. Decisions 1291/1998 and 1288/1998 of the Supreme Court), based on confirmed facts that eliminate those that the experts consider as the necessary basis of their opinion (Androulakis, 1994). Although it is not referred to in the Code of Penal Procedure, according to the precedents of the Supreme Court the Court should justify the rejection of an expert’s report (e.g. Decisions 1902/1987, 1165/1989, 6/1995, 1552/1995 and 1518/1995 of the Supreme Court). In the case that the law defines that conclusions of an expert’s report would be constraining for the Court, this regulation would be opponent to Article 87§1 of the Constitution, which defines that justice is assigned by regular Judges who are ensured with personal and functional independence (Zacharis, 2002), and to Article 26§3 of the Constitution, which defines that the Judicial Authority is being exercised by the Courts. According to this article, justice is assigned only by the Courts and not by anyone else.

In one case (Decision 17/1999 of the Crete Appeal Court) in the presence of the Appeal Court two opponent expert reports were read. The first one was a medical examination and the second a segmental hair analysis. The medical examiner from the Ministry of Justice was not in a position to discriminate if the defendant was a drug addict or a simple user because, according to his report, ‘the drug substances the defendant used, caused only psychological dependence and not addiction’. For this reason the medical examiner came to the conclusion that the defendant was a simple user. The segmental hair analysis (42/1999 toxicological report) proved that the defendant was a drug addict. In the hearing, the medical examiner was questioned as a witness and testified that he accepted the toxicologist and his method. The Appeal Court convicted the defendant as a drug addict.

In Case 141/2001 of the Crete Appeal Court the medical examiner recommended a segmental hair analysis to be done but the District Attorney ignored this recommendation.

In this paper. 70 legal cases were studied. From each case we collected about nine elements. All this information was classified into 11 groups: the decision and the Court; personal elements of the defendant; police record; Bill of indictment; expert reports; the nine scientific criteria; expert reports for the substances; toxicomany; the decision; imputation; and remarks. In only four cases were all nine criteria used. In most cases the defendants were examined by medical examiners while in custody or in public hospitals. In only one case were the criteria used analytically by a psychiatrist (Decision 176/1999 of the Crete Appeal Court). In the remaining cases there was no reference to them at all. We are in a position to maintain, without any doubt, that the procedure prescribed by Article 1 of Ministerial Enactment 3982/1987 was not observed in any case. In addition, in most cases the defendants were examined immediately after their arrest. In these cases the medical examination was more reliable. We should mention that the infrastructure of Greek hospitals is insufficient, although the technology is satisfactory. Because of the large number of arrested persons, the chronic frames set out by the Ministerial Enactment are difficult to follow. Also, clinical examinations are not able to certify long-term use or drug use if the defendant has no corporal signs.

Concerning the addiction diagnosis (Article 2 of the Ministerial Enactment), we have to mention that this is not indispensably profound especially in the cases where we do not have laboratory examination and confirmation of drug use 3 days after the last drug administration or any laboratory examination at all (Article 1 of the Ministerial Enactment). Withdrawal symptoms may not be present during the 5 days of hospitalization and observation (Article 1 of the Ministerial Enactment).

Concerning the addiction criteria (Article 2 of the Ministerial Enactment), we have to say that we are not sure of the validity of the arrested person, especially in cases of previous arrests and knowledge of the procedural practice. In such cases the absence of laboratory examination and confirmation or the limitations of conventional samples (e.g. time after last use) incapacitate the diagnosis of addiction. Segmental hair analysis in all of these cases is the only useful tool for the verification of addiction because, as we substantiate above, it is able to give answers not only for recent but also for long-term use.

On the other hand, although hair testing for drugs of abuse is not especially referred to by any law or Ministerial Enactment in Greece, District Attorneys in Crete order hair testing to be performed in severe cases when, according to their opinion, medical examination is not able to give answers in legal issues such as the confirmation of drug use or the severity of abuse.

Various aspects of the constitutionality of hair testing have been the focus of many debates, especially with respect to sample collection. In cases related to infractions of the antinarcotics legislation, defendants often try to be judged as drug addicts in order to achieve optimal penalties (unpublished data). For this verdict to be confirmed, experts must further examine subjects. The aforementioned ambiguous aspects of constitutionality can be bypassed when subjects consent to examination. However, in cases where the subject objects to thorough
examinations, the court must judge this denial (i.e. against the defendant). Greek court decisions indicated that hair testing might not be judged to be an unlawful invasion of privacy. Nevertheless, some authors have argued that a defendant’s denial to sample collection should not be judged negatively, because sample collection without the subject’s permission represents a direct offence towards his/her rights as an individual. It is indisputable that hair testing provides information about the defendant beyond the specific matter of toxicomany. It is also undeniable that this information, being public, offends the defendant’s individuality. It should be mentioned, however, that thorough drug examinations such as hair testing not only ensures justice but, most frequently, provides aid for the addict/defendant (unpublished personal data).

We are in a position to maintain without any doubt that segmental hair analysis is not only a useful instrument to diagnose addiction but is necessary too. Especially in severe cases, where the medical examiner is not in a position to decide if the claim of toxicomany is real or not, segmental hair analysis may be the only way to prove it. In the remaining cases, where the medical examiner is able to diagnose the addiction, a segmental hair analysis is necessary because it is able to show the Court long-term drug use, the substances and the severity of abuse.

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