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The Big Market in Perforated Spoons*

Rome

"There is a growing market in Rome for spoons with holes in them.

What would anyone except a practical joker do with such a spoon?

'Not steal them, that's what,' said barkeeper Sergio Iannone, ...

... in the ancient Campo de' Fiori square in the center of historic Rome...

... The culprits, according to both bars, are the burgeoning band

... of drug takers in the Italian capital who have discovered that the

... standard Italian coffee spoon is just right for mixing up heroin

... powder and distilled water for a quick shot. A lighter flame

... held under the mixture for a few minutes reads it for the syringe

... and an injection.

... The Di Marzo Bar says that before they hit on the idea of

... punching holes in the spoons 'we were losing between 300 and 350

... a week, and that is a lot of spoons.' ..."

INTRODUCTION

Three years ago we were able to compare the quality and availability of street-drugs in the United States with The Netherlands (Amsterdam) in particular and Munich (West Germany) (1-2). At that time there were non-forensic street-drug analysis programs in each of these countries. Unfortunately, this is not the case today. Presently, the information concerning availability and composition of these materials in Europe is rather difficult to obtain.

In the past when one compared the non-forensic analytical results and the published forensic findings of street-drugs, the results have been very similar (3-4). Personal visits (Brussel to the forensic laboratories in Amsterdam in 1972, 1974, 1975 and 1976, London in 1975, and periodical consultations in Stockton, California have substantiated this impression. Samples of illicit drugs seen in these forensic laboratories were always similar to those seen in our street-drug analysis laboratory and in the laboratories of other non-forensic programs. e.g. common LSD (lysergic acid diethylamide) formulations were: orange and purple tablet triturates, small colored tablets (Micro-dots, Pyramids) and the gelatin squares (Window Pane). Parallel results were also documented for heroin, amphetamines, marijuana, and hashish samples. Thus, information obtained from either source could be used as reliable information on the illicit drugs available. The forensic and non-forensic laboratories served as unbiased checks on one another.

Additional sources (not as reliable) of information regarding the availability and prices of some street-drugs are the "market reports" in the magazines promoting and glamorizing drug use, e.g. High Times (5) and Head (6). The August 1977 issue of High Times (5) reports the following about the drug market in The Netherlands:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Quality</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSD</td>
<td>Blotter</td>
<td>450-800</td>
</tr>
<tr>
<td></td>
<td>US</td>
<td>250-350</td>
</tr>
<tr>
<td></td>
<td>2-4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>150-225</td>
</tr>
<tr>
<td></td>
<td>gm.</td>
<td>75-125</td>
</tr>
<tr>
<td></td>
<td>oz.</td>
<td>3-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60-85</td>
</tr>
</tbody>
</table>

* Prices in US dollars.

The following comments (Eske) about these quotations may cause some doubt as to the validity of these reports.

Domestic Grass: "As far as I have seen, the quality is very poor and price mentioned too high." LSD: "I have not seen any blotters this year only pyramids." Cocaine: "The quality of my samples not so decent, about 50% cut with lidocaine, cocaine, etc." Burmese Opium: "Never heard it was available!" and in conclusion, "I think their fantasy is admirable."

There are limitations to the data obtained from street-drug analysis programs. These data do not represent a strict scientific sampling (7). Sample submissions are voluntary; duplicate samples may be substituted; not all samples submitted are actually available on the street; samples are not necessarily submitted in proportion to their availability (7). In addition, the user is more likely to submit a drug which he has doubts about -- such as purity or identity.

During the past eight years, the actual chemistries of thousands of illicit drugs have been published (4, 2-27); these data will not be reported here in detail. However, we will compare the composition and availability of the more popular illicit drugs available in the street markets of The Netherlands, Italy, Germany, and in the United States.

Lysergic Acid Diethylamide (LSD). -- During the past eight years, approximately 3000 alleged LSD samples have been analyzed in Canada (9-10), The Netherlands (15-20-22), Germany (19), and the United States (7, 23, 26-27). Researchers had one conclusion in common -- alleged LSD samples did, in fact, usually contain some LSD (Amsterdam: 87% of all alleged formulations; Munich: 87%; United States: 87%). The amount of LSD in each formulation tended to vary rather widely -- Amsterdam: 3-490 mcg./dose (20); Munich: just detectable amounts up to nearly 500 mcg./dose (19); United States: just detectable amounts up to nearly 500 mcg./dose (7, 23). Any amount over 120 mcg./dose should be regarded as excessive.

A street myth persists that some LSD samples are contaminated with "speed" (amphetamines) or strychnine. After eight years of analysis and investigation of over 3,000 samples throughout the U.S.A., Canada and Europe, there has been no reported cases of LSD mixed with strychnine and only a few contaminated with amphetamines or mescaline (7). In 1972, Malone (28) reported that large amounts of LSD (in excess of 150-200 mcg.) can mimic strychnine poisoning and it has been our findings (28) and others (7) that samples said to contain strychnine usually had a high LSD content.

The physical appearance of the LSD samples were and continue to be similar in each country, e.g.: orange tablet triturates ("Orange Sunshine", "Sunny Explos", "California Sunshine"), spots on paper ("Blotter Acid"), gelatin and plastic flakes of various colors ("Lsd tape Acid"), and very small tablets ("Micro Dots"). More recently a very small pyramid-shaped tablet (usually blue or purple-blue) has appeared as well as clear and colored capsules. Since the quality of the LSD formulations were comparable and the dosage forms similar, possibly the international LSD street markets are supplied from a common source(s). LSD continues to be readily available on the streets of Europe and the United States for those persons that request it. The suppliers and dealers continue to provide the "drugs" that users request.

Mescaline. -- This compound from the peyote cactus (Lophophora Williamsii) has a long history of use in the New World and is reputed to be a mild psychedelic. Colorful hallucinations and altered human consciousness result with dosages of approximately 300-350 mg. (29). Some drug experimenters consider this state to be pleasant and without danger -- hence they prefer "mescaline" to LSD when both are offered for sale. However, natural mescaline, either as the alkaloid or as Peyote buttons, is not usually available to the dealer. The synthesis of mescaline is relatively costly and difficult considering the amount that an individual needs for a single "trip." Consequently, street-drug laboratories improvise to meet the demand. The nature of such improvisations in Europe and America has been documented in a number of publications (7, 19, 22-23, 26-27). Most frequently these mescaline samples relied on LSD as the active ingredient. Occasionally, in the
United States only, PCP (phencyclidine) was found in addition to the LSD. This veterinary tranquilizer-anesthetic (PCP) is reputed to be added to these preparations "to smooth out the trip." Currently the US street market shows a similarity to the "mescaline" formulations (7,26-27). In 1976, PharmChem Laboratories of Palo Alto, California (26) had 57 alleged mescaline samples; 36 were LSD only, one was LSD+PCP, one PCP, and eight samples contained some mescaline. The LAC-USC Medical Center group (Los Angeles, California) had 12 alleged mescaline samples in 1976 (27): two were mescaline, one Peyote button, six LSD, and four samples contained other drugs. The Amsterdam forensic laboratory has not had any mescaline samples for the past year. It is interesting to note that authentic mescaline-containing cacti may be purchased at the flower market on the Singel Canal in Amsterdam. An advertisement in High Times (No. 10, June 1976) offers live cuttings of the San Pedro cactus (Trichocereus pachanoi Britton & Rose) at prices of $10/6 inches or $100/120 inches. This cactus does contain mescaline. Crosby and McLaughlin (30) have reported the isolation and identification of mescaline from T. pachanoi (0.3%) of the freeze-dried material.

Psilocybin. -- Three years ago we wrote (1-2):

"...that the sensational reports in the popular press about the 'magic mushrooms' of Mexico created a street demand for both psilocybin and psilocybin-containing mushrooms. These mushrooms are of the famed Psilocybe species and of the less well known Conocybe and Stropharia species found in the American states of California, Oregon and Washington."

The demand is still rather strong for these mushrooms. Apparently users, recognizing that psilocybin in man-made dosage forms in simply not available, have tended to put more "faith" in samples that come in the natural form, mushrooms. Perry (7) has summarized the analytical results of 928 alleged psilocybin-containing samples submitted to street-drug analysis programs in the United States during the years 1969-1975. The results were: 126 psilocybin-containing mushrooms; 524 samples with no psilocybin (436 samples relied on LSD for activity); and 278 samples were devoid of drugs. In the year 1976 (26), PharmChem Laboratories had 97 alleged psilocybin samples submitted and reported that 29 samples of mushrooms were positive for psilocybin; 14 mushroom samples were positive for serotonin (inactive taken orally); 7 contained LSD only; one was LSD+PCP; one was LSD+MDMA; two were mescaline; one a mixture of atropine, ephedrine, methapyraline, and theophylline. During 1976, they also saw two alleged DET (diethyltryptamine) samples (one DET, one negative) and one sample of DMT (dimethyltryptamine) that was actually DMT (26).

In the past, these drugs were seldom encountered in the illicit markets of Europe (19,22) and this continues to be true today. These drugs appear to be restricted to North America.

Cannabis Derivatives. -- Marihuana, the dried plant material, is still probably the most common form of cannabis seen in the United States. The availability of hashish, a resinous preparation from Cannabis sativa L., appears to be increasing in the United States if Drug Enforcement Administration (DEA) seizures are an indication of availability. Seizures were: 445 lbs. in 1973, 812 lbs. in 1974, 3,771 lbs. in 1975, and 3,718 lbs. in the first quarter of 1976 (32). In Europe, hashish is the most frequently encountered Cannabis sativa preparation (19,22).

The rumor that "opiated hash" is sometimes available still persists. The results of an investigation in The Netherlands in 1973 supplied the answer (24).

"MDA (3,4-methylenedioxyamphetamine) has been part of the street scene since 1967. It was originally marketed as 'speed for lovers' and many earlier samples were alleged to be mixture of other drugs (such as mescaline and cocaine). Although never ubiquitous, its availability has risen gradually; alleged MDA samples accounted for 2.7% of samples submitted in 1969-72, and for 2.9% of those from 1972-75. Demand is moderate but noticeable, and its general street reputation is positive. It is commonly available as a powder, sometimes pink or tan in color, selling at $25-$45/gram. A number of samples have been sold as 'Sasha' or 'Sesame'.
Forty-one samples of hashish that were positive for morphine were subjected to thin-layer and gas chromatographic analysis. The samples analyzed were found to have caffeine from traces to a high of 0.9%. Five samples were negative for caffeine but these samples contained very little morphine (an average of 0.03% and ranging from 0.01 to 0.05%). The morphine content of the other samples ranged from 0.01 to 0.27% (average 0.16%). Considering that this latter type of hashish was to be smoked in a cigarette, not more than 0.6 mg. of morphine would be available in a cigarette, probably the amount of morphine inhaled would be an insufficient quantity to produce any physiological response. The investigators came to the following conclusions.

"Nevertheless, the presence of tea leaves and the rather high content of caffeine in almost all the samples investigated, as well as the easy way in which a suspension in water could be made with this kind of hashish, all point to the fact that the hashish was intended to be consumed as a drink. (As tea normally contains about 2 percent of caffeine, the hashish must have been mixed with equal quantities of powdered tea leaves in the preparation process.) The presence of small quantities of opium in these hashish samples may be explained by assuming that, during the preparation of this type of hashish, the same apparatus was used as in the preparation of smoking opium introducing, by this mode of operation, the small amounts of morphine as a mere impurity."

Currently, "Thai Sticks" ("Buddha Grass," "Buddha Sticks") would appear to be an international favorite. These desirable and expensive "beauties" ($3-$20 each) have been seen in street-drug analysis programs in the United States as well as in the forensic laboratories of Amsterdam and Australia.

While "tetrahydrocannabinol" (THC) and the "cannabinols," as the pure substances, are offered frequently in the United States street-drug market (8, 23, 26-27), such invitations to purchase the essence of C. sativa are very rare in Europe. The cannabinoids in their pure form are unobtainable in the street-drug markets of both the United States and Europe. The most frequently identified substitute in the United States has been the tranquilizer-anesthetic phencyclidine (PCP). To date, the Amsterdam forensic laboratory has never had a sample of illicit PCP, while the non-forensic analytical group in Amsterdam (Bureau of Pharmacy, University Hospital, Wilhemina Gasthuis) identified three PCP-containing samples in a single week during September 1972. Mattle (19) has not had any samples of THC and has not identified any PCP-containing street-drugs when he was monitoring the illicit market in Munich.

Ferry (8) has reported that during the years 1969-1975, 538 samples of alleged THC were submitted to street-drug analysis programs in the United States and 87% contained either PCP, TCP (a thiophene analogue of PCP), or some combination of these drugs. Hellsten (26) of the PharmChem Research Foundation (Palo Alto, California) wrote that in 1976, 67 samples of alleged THC were submitted to their laboratory and that 88% contained either PCP, TCP plus FCC (1-piperidinocyclohexanecarbonitrile, an intermediate in PCP synthesis), or TCP plus some other drug or drugs. THC (tetrahydrocannabinol) was never identified. Lundberg's group (27) at the LAC-USC Medical Center in Los Angeles, California has reported similar results. The following quotation from the 1976 report of the LAC-USC Medical Center program (27) may indicate the dimensions of current PCP use in the United States.

"Although the number of PCP-containing street samples declined this year, the number of patients hospitalized due to PCP intoxication increased sharply. More than 200 patients were treated for PCP intoxication."

Apparently PCP use is increasing in Canada (S. Clark, "Street Drug Scene," Summer School on Alcohol and Drugs, University of Calgary, Calgary, Canada. July 24-29, 1977) but from available information this does not appear to be the case in Europe.

Amphetamines -- The term amphetamine includes d-amphetamine, d,l-amphetamine and methamphetamine. The drug user will generally accept them interchangeably (7). In the United States, illicit alleged amphetamine is usually offered in the form of small, white, cross-scored tablets ("Whites", "White Crosses", "Beans", "Bennies", "Mini-Bennies") usually weighing 40-50 mg. Illicit methamphetamine is usually seen as a white powder and is more often used for snorting or injecting (7).

Three years ago we reported (1-2) that amphetamine was readily available in the United States but this is no longer true. Ferry (7) has written the following:

"The illicit amphetamine market has undergone a dramatic change in five years. From 1969 to 1972, relatively pure amphetamine was readily available, especially in tablet form (approx. 50 mg. tablets, 2-10 mg. of drug) with a consistent rate of about 65% containing only amphetamine. The remaining 35% contained a wide variety of drugs; little pattern was evident, with barbiturates and caffeine being perhaps the most common adulterants."

"Beginning in 1973, however, the quality began to drop sharply; so much so that by 1975, the overall (1965-1975) deception rate for amphetamine jumped to 70%; only 30.6% contained just amphetamine. Another 23.5% contained amphetamine plus other drugs. Milder stimulants, especially caffeine and ephedrine, accounted for the bulk of the adulterants throughout 1973 and 1974, both alone, and in various combinations. Besides the ubiquitous caffeine and ephedrine, labs began to commonly find drugs such as diphenhydramine, phenylpropanolamine, pemoline, phenidmetrazine, chlorphetamine, theophylline, phenteramine and chlorphenteramine ...."

An interesting and potentially lethal "White Cross" appeared on the street markets of the United States in the last months of 1975 and early 1976: the active ingredients of these "White Crosses" were strychnine (3.7 mg./tablet) plus ephedrine (34). Approximately 30,000 of these tablets were seized in the Chicago area (36). In California (35), the Drug Enforcement Agency (DEA) analyzed a seizure of these tablets and found d,l-amphetamine, strychnine (2.7%) plus brucine (0.15%). Another batch of "White Crosses" from Sacramento County (California) were strychnine (2 mg./tablet) and ephedrine (36). An Arizona seizure contained 4.2 mg. of strychnine per tablet plus ephedrine (37). These tablets were also seen by non-forensic street-drug analysis programs (7).

The European amphetamine scene has some differences. In the past (22), amphetamine was usually in tablet form and methamphetamine usually a powder; most samples analyzed contained some of the alleged drug. Currently the Amsterdam forensic laboratory is seeing methamphetamine (about 10-15 samples a month), and the quality is generally good. Recently a very modern factory (illicit) for the production of methamphetamine was found in North Holland. The chemist had an excellent reference..."
librarian of chemical handbooks with an estimated value of 20,000 guilders ($8,000.00 US). "The result was he made a very good product."

Cocaine. -- This compound has a long history of non-medical use both in the Americas (38-39) and in Europe (39-40). During the past five years, cocaine has become more readily and widely available on the illicit markets of the United States (7,23,25-26). A newspaper story in 1974 reported that the "cocaine racket is booming in Britain" (41). Current cocaine seizures in Amsterdam would suggest that cocaine is widely available in Europe. The American cocaine market can best be described by quoting Perry (7) who has published the analytical results of 2,468 alleged cocaine samples submitted to street-drug analysis programs in the United States during the years 1969 to 1975.

"In the past few years, the popularity and availability of this drug has grown dramatically. From 1969-72, alleged cocaine accounted for 7.8% of analyses (ranked sixth); from 1972-75 it jumped to 23.8%, far and away the single most-submitted drug (20.2% overall). It is quite likely that an even larger number of samples would be submitted if quantitative analyses were still available. Labs that originally offered this service have generally seen a mild decrease in submissions since 1974, when the DEA ruled against the reporting of quantitative results."

"An interesting phenomenon concerning cocaine is its high price. It is considered to be a status drug, and prices have ranged from $1,000-$2,000 per ounce and up to $100/mg. Price seems to have absolutely no correlation with purity or strength of the drug, however."

"Deception rates for cocaine have remained more or less constant. Almost two-thirds of alleged cocaine samples contain cocaine and no other drug except for sugar dilutions. This is up slightly from 1969-72. Another one-quarter of the samples contain cocaine plus one or more other drugs (down slightly from 1969-72); over 90% of the time these drugs are other local anesthetics. Lidocaine is the most common, with procaine, benzocaine, butacaine, tetracaine and others also seen in various combinations. Other drugs found in cocaine samples include amphetamine, caffeine, ephedrine, phencyclidine, heroin and many others. Of those samples containing no cocaine, most are local anesthetics."

"Although the rate of deception for cocaine appears to be relatively low, the figures are somewhat misleading. Unless the percentage of cocaine in a sample is relatively high (over 60-70%) and other drugs are not present, or present in small amounts, the drug would be considered a rip-off by most users. Perhaps 50% of the cocaine-only samples (and almost none of the cocaine/local anesthetic combinations) meet these criteria. By this measure, only 35% of the cocaine being sold would not be regarded as a deception."

Helisten (26) has summarized the analytical results of 594 samples of alleged cocaine submitted to the PharmChem Laboratories (Palo Alto, California) in 1976. The results were: 347 samples contained various amounts of cocaine as the only drug; 213 were cocaine plus some other drug; 32 samples containing no cocaine were identified as 16 local anesthetics, 4 sugars, 3 methapryline (an antihistamine), 3 acetaminophen plus other anesthetics, 2 heroin, and one sample containing the omnipresent PDP (phencyclidine). Three samples were devoid of any drugs.

Currently cocaine is available in Europe and increased profit is assured in the same way as in the United States - dilute the pure material so that there will be an adequate supply to meet the demand. Approximately 50% of the cocaine samples seized by the Amsterdam police are cut with local anesthetics such as lidocaine and procaine. One sample of alleged cocaine, seized by the Amsterdam police in the summer of 1976, was 700 gm. of diethylpropion (Amfepramone\textsuperscript{6}, Tenate\textsuperscript{6}, Tepani\textsuperscript{6}), an appetite depressant. Interestingly, this compound gives a positive cocaine test with cobalt thiocyanate test solution (a characteristic flaky, blue precipitate). Positive reactions are also seen with atropine, cocaine phosphate, heroin, meperidine, methylenebdate hydrochloride (Kitalin\textsuperscript{6}), procaine hydrochloride, and methapryline hydrochloride (42).

In 1975, the Italian government made a report on the illicit drug traffic in Italy for 1974 to the United Nations Economic and Social Council. They stated that trafficking in cocaine had increased and that they had seized 11.7 kg. of cocaine during 1974 (43). (See page 12 for first 6 months of 1977.)

Heroin (Diamorphine). -- Alleged heroin samples are infrequently submitted to street-drug analysis programs in the United States (8,23,25-27); therefore, it is necessary to rely on other sources of information for the composition and actual heroin content of the material used by the addicts in the United States. In the past, the Amsterdam group (working with treatment centers) saw many heroin samples of the type used by the addicts in The Netherlands. They regularly analyzed the submitted material and monitored the quality of the illicit heroin market. The results of the Amsterdam group have been published for the years 1970-74 (1-2,15,20,22) and are similar to the findings of investigators in Germany (19). However, in December of 1973 the composition of the street-heroin in Amsterdam changed dramatically. The illicit heroin became a mixture of heroin+caffeine or heroin+caffeine+strychnine (Heroin No. 3). This material was either pink-brown or grey-white in color and was usually in a granular form (color was not an indication of composition). The quantitation of a typical strychnine-containing sample was: 57% heroin, 40% caffeine and 2% strychnine. Another similar appearing sample contained 50% heroin and 50% caffeine. Quantitative analyses of the granular heroin indicated an average heroin content of approximately 40% (range 20-60%) and a caffeine content of approximately 50% (range 35-63%). The strychnine-containing samples had an average of 2% strychnine (range 0.5-4.8%). The Amsterdam police had made seizures of the same type of street heroin (Table 1) and their analyses yielded almost identical results. There is some evidence that this type of heroin is prepared for smoking and not intended for injection (44). Current knowledge (44) would suggest that these heroin mixtures are prepared in the country of origin. There is no evidence that they are prepared in Europe.

Newspaper reports (45-46) would suggest that heroin use has become widespread in Europe. The following quotations indicate the seriousness of the problem.

"Heroin is Sweeping Europe"

"Scottland Yard's fear of the growing British black market in heroin mirrors a larger problem sweeping the continent. Last year, 1,547 pounds of heroin were seized in West Europe, a three-fold increase over the previous year."

"West German officials expect that 500 will die of heroin-related causes there this year--five times more than in 1972. Estimates of the number of West German heroin addicts has risen from 2,000 in 1972 to 25,000 today (1977)."
Table I. -- Heroin Seizures in Amsterdam and Detection of Strychnine

<table>
<thead>
<tr>
<th>Time</th>
<th>Number of Seizures</th>
<th>Number of Samples Positive for Strychnine</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th Quarter</td>
<td>108</td>
<td>70</td>
</tr>
<tr>
<td>1976</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Quarter</td>
<td>124</td>
<td>116</td>
</tr>
<tr>
<td>2nd Quarter</td>
<td>105</td>
<td>105</td>
</tr>
<tr>
<td>September</td>
<td>103</td>
<td>103</td>
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<td>October</td>
<td>69</td>
<td>69</td>
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<tr>
<td>November</td>
<td>78</td>
<td>78</td>
</tr>
<tr>
<td>December</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>1977</td>
<td></td>
<td></td>
</tr>
<tr>
<td>January</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>February</td>
<td>29</td>
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<td>March</td>
<td>22</td>
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<td>May</td>
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<td>June</td>
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</tr>
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<td>July</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>August</td>
<td>46</td>
<td>46</td>
</tr>
</tbody>
</table>

* In addition to the decrease in the numbers of seizures during the past 9 months (December 1976 to August 1977), the quantity of heroin per seizure has also decreased. The quality of the heroin has not changed, always heroin+caffeine+strychnine (Heroin No. 3) and has not been "cut."

"Heroin use is also a problem in Scandanavia."

"Heroin Traffic, Deaths Grow in West Berlin"

"West Berlin... has become one of Europe's cheapest and deadliest heroin markets."

"... Police estimate that 5,000 of the 2 million West Berliners -- one in every 400 -- is a heroin addict..."

"This year's drug death toll is now 64, 10 more than in all of last year. The 54 dead in 1976 matched the toll in all of France that year and was nearly a fifth of the 283 dead in the other 10 West German provinces." (46).

In the eastern part of the United States (Philadelphia), typical samples of street-heroin packaged for sale weigh 111 mg. (range 65-197 mg.) and average only 4.5% heroin (range 0.4-8.9%) plus 2.4% quinine (range 0.3-4.2%) with the remainder consisting of unspecified diluents (47). Investigators have shown that the heroin available in the western United States usually contains similar amounts of heroin (3-10%) but the most common other drug was procaine rather than the traditional quinine (4).

Perry (8) summarized analytical findings of 264 samples of heroin submitted to street-drug analysis programs in the United States during the years 1969-75. The results were: 97 (36.7%) contained heroin as the only drug; and 107 (40.5%) samples contained heroin plus other drugs (89 samples of the 107 were heroin plus procaine or quinine). Analysis of 47 alleged heroin samples by PharmChem Laboratories in 1976 (26) averaged 43.9% heroin: 13 samples of brown/grey heroin averaged 7.3% (range 1.2-21.0%) and 34 white heroin samples averaged 57.8% (range 5-94.9%). Thirty-two of the samples contained other drugs in addition to heroin, such as local anesthetics, mephaprazine, caffeine+quinine, and one sample was heroin+cocaine (26).

Nationally, heroin purity has dropped from 6.6% in the first quarter of 1976 to 5.8% in the first quarter of 1977 (48). This would suggest that the white heroin samples submitted to the nonforensic laboratories were probably not prepared for street sale.

CONCLUSIONS

Analyses of thousands of street-drugs collected in The Netherlands, (3,15,20-22), Germany (19) and the United States (4,7-8,11-12,16-18,23,26-27) have shown that alleged LSD (lysergic acid diethylamide) samples usually do contain LSD with the amount of LSD per dose varying widely. Alleged mescaline-containing samples frequently rely on LSD for activity. Psilocybin is generally not available and the ubiquitous LSD in the most common substitute. The amphetamine analogs such as MDA (3,4-methylenedioxyamphetamine), DOM (STP, 4-methyl-2,5-dimethoxyamphetamine), DOB (4-bromo-2,5-dimethoxyamphetamine), and MMDA (3-methoxy-4,5-methylenedioxyamphetamine) are available in the United States but are not seen in Europe. Pure THC (tetrahydrocannabinnol) has never been identified in a street sample; most frequently the tranquillizer-anesthetic PCP (phencyclidine) is the active ingredient. The use and availability of PCP seems to be restricted to North America - the United States in particular (7,19,22,26-27). Products derived from the plant Cannabis sativa L., such as marihuana and hashish, usually are as alleged and not treated or contaminated with other drugs such PCP and opium. Hashish is common in Europe (22) while marihuana is common in the United States (23,25). The availabil-
ity of hashish in the United States seems to be increasing (32). The quality of material alleged to be amphetamine has decreased dramatically in the USA. The once reliable "White Crosses" are now very unreliable - most frequently they contain some drug or drugs such as caffeine or ephedrine as a substitute for amphetamine (7,26-27). The quality of amphetamine and methamphetamine in Europe is usually quite good. The samples seen in the forensic laboratory in Amsterdam are usually determined to be a "quality product." Cocaine and cocaine-local anesthetic mixtures may be more common in the United States (7,26-27) than in Europe (19,22-23,25), but there is evidence that cocaine is now more popular and available in Europe (41,43). The increased number of cocaine and cocaine-local anesthetic samples seen in the forensic laboratory (Amsterdam) creates this impression. The greatest international differences are found in regard to street heroin:

United States: 5-10% heroin with small amounts of quinine or procaine;
Europe: 40-50% heroin with 50-60% caffeine and always a small amount of strychnine (0.5-5%). The American heroin user would have serious medical problems (overdose) if he used the much more potent European heroin preparation.

Table II. Illicit Drug Seizures in Italy for the First Six Months of 1977.*

<table>
<thead>
<tr>
<th>Illicit Drug</th>
<th>Weight, Kg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marihuana</td>
<td>427</td>
</tr>
<tr>
<td>Hashish</td>
<td>492</td>
</tr>
<tr>
<td>Hashish Oil</td>
<td>200</td>
</tr>
<tr>
<td>Opium</td>
<td>1</td>
</tr>
<tr>
<td>Morphone-like Products</td>
<td>2</td>
</tr>
<tr>
<td>Heroin</td>
<td>21</td>
</tr>
<tr>
<td>Amphetamine</td>
<td>0.348</td>
</tr>
<tr>
<td>Cocaine</td>
<td>5</td>
</tr>
<tr>
<td>Coca Leaves</td>
<td>0.5</td>
</tr>
<tr>
<td>LSD (lysergic acid diethylamide)</td>
<td>850 doses</td>
</tr>
</tbody>
</table>

* Personal communication GA to JKB, Rome, November 18, 1977.

REFERENCES:


HEROIN-CAFFEINE-STRYCHNINE MIXTURES -- Where and Why?

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INTRODUCTION

"The non-medical use of opium and its derivatives is most widespread in certain countries east of the Mediterranean and in South-East Asia, despite the publicity given to the situation in North America. In the past twenty years there has been a substantial shift from the use of opium to heroin in some of those countries where total prohibition of the use of opium was undertaken. This was especially true in those areas where there were many persons whose custom it was to use opium for its intoxicating properties as well as for the relief of pain." (1)

Even though heroin use may be more widespread in areas other than North America and Europe, there appears to be an increasing demand for this material in parts of the Western World. The seizures of illicit heroin by the police in the Netherlands have increased from 50 gm. in 1971, 2,297 gm. in 1972 to 18.8 kg. in the first three quarters of 1973 (2). Subsequent seizures in Amsterdam would suggest that this trend is continuing.

The illicit heroin samples seen in the laboratory of the municipal police of Amsterdam, during 1972 and most of 1973, were usually white powders containing varying concentrations of heroin (40 to 95 percent). Then in December of 1973 a dramatic change took place in both the physical appearance and the composition of the heroin seized by the Amsterdam police. These materials were grey or brownish-pink granules. The granules were usually 1-3 mm. but occasionally 5-6 mm. in length, usually packed in heat-sealed plastic bags (e. g. 8x10 cm.). These packages contained approximately 15 or 30 gm. of either grey or pink-brown granules. The colour was not an indication of composition. Analyses of these materials gave the following results:

<table>
<thead>
<tr>
<th>Type</th>
<th>Heroin</th>
<th>Caffeine</th>
<th>Strychnine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>50 - 70 percent</td>
<td>30 - 50</td>
<td>&quot;</td>
</tr>
<tr>
<td>Type 2</td>
<td>50 - 70 percent</td>
<td>30 - 45</td>
<td>0.5 - 10</td>
</tr>
</tbody>
</table>

The strychnine was usually identified as the hydrochloride.

For the past three and a half years in Amsterdam the Department of Pharmacy, University Hospital, Wilhemina Gasthuis has been analyzing heroin samples for treatment centres in the city. The results were similar to those of the Amsterdam police(3,4). But then in December of 1973 the heroin samples submitted to the University Hospital were found to contain either heroin-caffeine or heroin-caffeine-strychnine in the grey or pink-brown granules. Quantitative analysis of these heroin samples (5) showed an average heroin content of approximately 40 percent (range 10 to 60 percent), caffeine approximately 50 percent (range 35 to 63 percent) and the strychnine-containing samples had an average of 2 percent strychnine (range 0.5 to 4.8 percent).

During May, June and the first half of July 1974 the Amsterdam police made 49 seizures of illicit heroin, packaged for the street market, 28 (57 percent) of these seizures contained strychnine in addition to heroin and caffeine, 21 samples contained heroin and caffeine only. Subsequent seizures of illicit heroin have shown upon analysis a similar pattern.

Discussion

We were of the opinion that these mixtures were prepared in the country of origin and further, that the heroin was not diluted for profit but was prepared for some method of use other than by injection. Injection is the usual method of administration by addicts in the Netherlands. Consequently we wrote to 14 different forensic laboratories (representing 8 countries) asking if their laboratory had had any experience with these types of heroin. Also information was requested about the methods of use in the countries contacted. Four replies were received. Only one reported familiarity with greyish granules which consisted of heroin (40 to 60 percent) and caffeine (60 to 40 percent) but no strychnine. Another reply reported familiarity with granular heroin but where the composition and colours were quite different from the heroin seized in Amsterdam and strychnine had never been detected. The fourth reply (6) was the most informative.

"The granules that you describe are similar to those which are made in Hong Kong. Here they are known as No. 3 heroin. They are consumed by smoking, the process being termed as 'chasing the dragon'..."

"With regard to the composition of the granules, it is true that a strychnine salt is occasionally added... The heroin, incidentally, is present as the hydrochloride." (6)

Current evidence (6) would suggest that this granular heroin seen in Amsterdam was prepared for smoking purposes but has "escaped" into those illicit markets where intravenous injection is the usual method of use.

Pharmacological data could not be found to assess the effects of injecting solutions of these heroin mixtures. The amount of strychnine in the strychnine-containing heroin samples is probably insufficient to be a threat to life. It is estimated that 50 to 100 mg. of these mixtures is used for a single injection. Thus the amount of strychnine injected each time would probably not exceed 5 mg. For an adult, the lethal dose of orally ingested strychnine is reported to be between 60 and 100 mg. (7)
Conclusions

The reasons for the addition of caffeine, and sometimes strychnine, to heroin prepared for smoking are apparently not known. The presence of small amounts of strychnine in some illicit heroin used for injection by European addicts is probably not life-threatening to the user. It has been stated that strychnine is very readily and rapidly destroyed, primarily in the liver. The rate of destruction is such that the equivalent of two lethal doses can be given over a period of 24 hours without noticeable toxic symptoms or cumulative effects (8). But, if the amount of strychnine in these samples was increased the possibility of strychnine poisoning could become a reality.

Current knowledge (6) would suggest that these heroin mixtures are prepared in the country of origin. There is no evidence that they are prepared in Europe.

References