4.6 Analysis of Stimulant Drugs Using GC/MS - *GCMS*

•Explanation

Urine samples of people suspected of using stimulant drugs are analyzed to detect the drug. The following are substances targeted by the Stimulant Control Law.

(1) Phenyl-aminopropane, phenyl-methyl-aminopropane and other salts of this kind
(2) Material specified by laws as being active stimulants
(3) Substances that contain any material covered by item and above, which are shown in Fig. 4.6.1.

The handling of these compounds is strictly regulated making them difficult to obtain, so a similar compounds with weak stimulant effects were analyzed as TFA (trifluoroacetyl) derivatives using the EI method and CI method (Fig. 4.6.2).
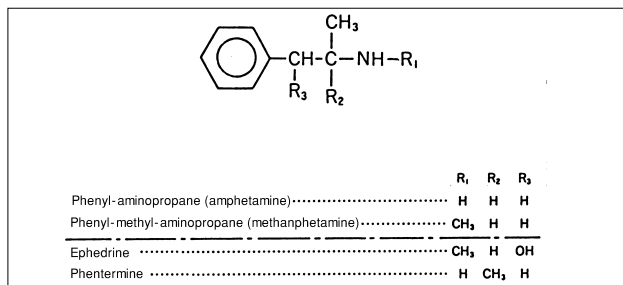

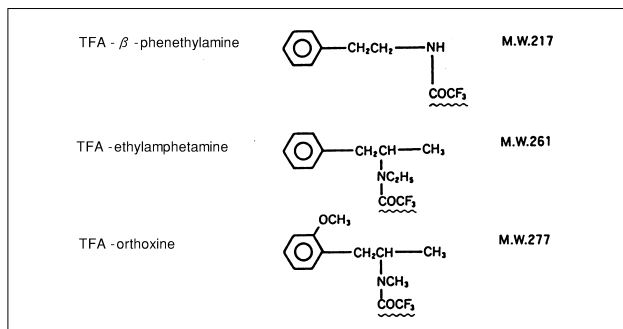Fig. 4.6.1 Structural formula of stimulant drug

Fig. 4.6.2 Structural formulas of compounds similar to stimulant drug used for analysis
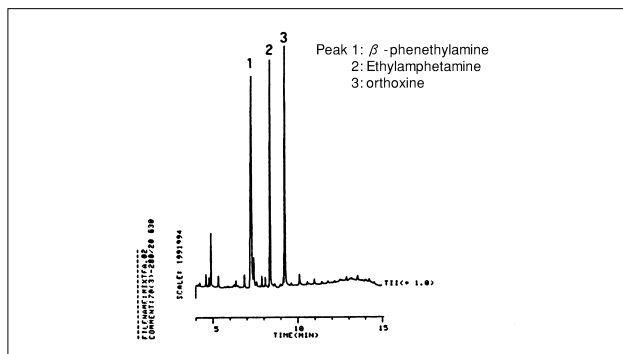

Fig. 4.6.3 TIC of TFA derivatives of stimulant drug dummy compounds

•Analytical Conditions

Instrument   : GCMS-QP1000
– GC –
Column   : CBP-5 (25m × 0.22mmi.d. df=0.25μm)
Column Temp.   : 70℃(3min) – 20℃/min – 230℃(3min)
Injector Temp.   : 250℃
Carrier gas   : He 100kPa
Injection Method : Splitless (Sampling Time=2min)
Injection Volume : 2μL
– MS –
Interface Temp.   : 250℃
Ion Source Temp. : 250℃
Ionization Method : EI/CI (Reaction gas: isobutane)
Scan Range   : m/z 35-700(EI)
                    m/z 100-700(CI)
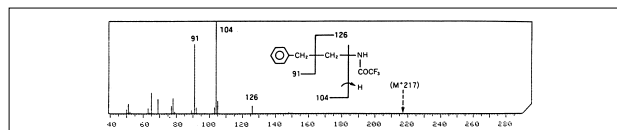Scan Interval   : 2sec

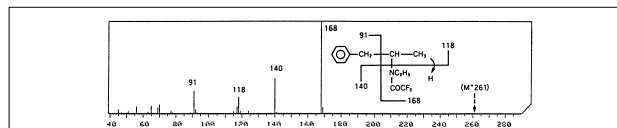Fig. 4.6.4 EI mass spectrum of peak 1 (ß-phenethylamine)

Fig. 4.6.5 EI mass spectrum of peak 2 (ethylampthetamine)
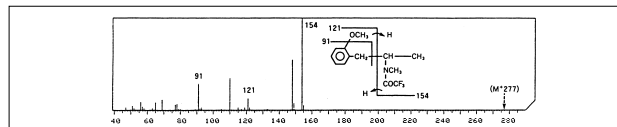

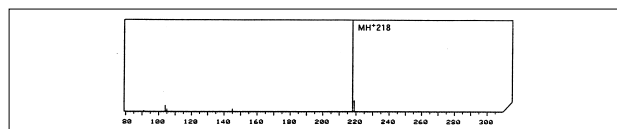Fig. 4.6.6 EI mass spectrum of peak 3 (orthoxine)

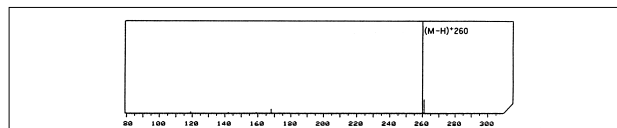Fig. 4.6.7 CI mass spectrum of peak 1 (ß-phenethylamine)
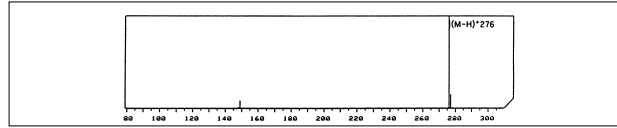

Fig. 4.6.8 CI mass spectrum of peak 2 (ethylampthetamine)

Fig. 4.6.9 CI mass spectrum of peak 3 (orthoxine)