Analysis of a Benzodiazepine-Based Drug Using GC–MS

Benzodiazepine drugs are commonly used in sleeping aids and tranquilizers, and sometimes in crimes or suicide. Therefore, these chemical substances are often analyzed by forensic laboratories for criminal or academic investigations. This datasheet shows the results from using GC-MS to measure 9 types of benzodiazepine drugs.

Analysis Conditions

Table 1: Analysis Conditions

<table>
<thead>
<tr>
<th></th>
<th>GC-MS</th>
<th>Column</th>
<th>Glass insert</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GCMS-QP2010 Ultra</td>
<td>Rxi®-5Sil MS (30 mL, 0.25 mm i.d., df=0.25 µm, Shimadzu GLC P/N:13623)</td>
<td>Silanized splitless insert (P/N: 221-48876-03)</td>
</tr>
</tbody>
</table>

**[GC]**
- Vaporization chamber temperature : 260°C
- Column oven temperature : 60°C (2min) -> (10°C/min) -> 320°C (10min)
- Injection mode : Splitless
- Sampling time : 1 min
- High pressure injection method: 250 kPa (1.5 min)
- Carrier gas : Helium
- Control mode : Linear velocity (45.6 cm/sec)
- Purge flow rate : 3.0 ml/min
- Sample injection quantity : 1.0 µL

**[MS]**
- Interface temperature : 280°C
- Ion source temperature : 200°C
- Solvent elution time : 2.0 min
- Measurement mode : Scan
- Mass range : m/z 35-600
- Event time : 0.3 sec
- Emission current : 150 µA (high sensitivity)

Fig. 1: Total Ion Current Chromatogram and Mass Spectra
1: Flunitrazepam, 2: Fluprazepam, 3: Flurazepam
Fig. 2: Total Ion Current Chromatogram and Mass Spectra
4: Fludiazepam, 5: Diazepam, 6: Estazolam, 7: Etizolam

Fig. 3: Total Ion Current Chromatogram and Mass Spectra
8: Medazepam, 9: Midazolam