Plasma Ethylene Glycol and Diethylene Glycol Analysis by Gas Chromatography with Flame Ionisation Detection

Clinical Biochemistry
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Sending Specimens for Analysis
This service is available 24 hours. During working hours (09:00 - 17:30) please contact the laboratory on 0121 507 4138. Out of hours (17:30 - 09:00) please contact switchboard on 0121 554 3801 and ask them to bleep the On-Call Duty Biochemist.

Sample requirement: minimum of 1 ml of plasma.

DO NOT SEND GEL TUBES OR SERUM FROM GEL TUBES AS THEY INTERFERE WITH ANALYSIS
• Please contact lab for advice
• Samples should be stored at 4°C prior to dispatch.
• Send samples at ambient temperature

Fluids suspected of containing toxic diols can also be analysed. Please send a minimum of 1 mL.

Limit of Quantification
Ethylene Glycol 25 mg/L
Diethylene Glycol 25 mg/L

Our assay is capable of the simultaneous detection of Ethylene Glycol (ETHG) and Diethylene Glycol (DEG) in plasma. It uses a capillary column and an Agilent 6890N Gas Chromatograph with Flame Ionisation Detection.

Performance
The assay has a low limit of detection for both ETHG and DEG of 25 mg/L, and excellent precision (intra-variation <5% and inter-variation<7%).

Clinical Use
Ethylene Glycol (ETHG) is a common constituent of antifreeze and screenwash. Another diol, Diethylene Glycol (DEG) may also be present in these products. Both ETHG and DEG are metabolised by alcohol and aldehyde dehydrogenases to produce toxic metabolites resulting in renal failure, increased osmolar gap and metabolic acidosis, although this may be delayed in patients ingesting DEG only1-4. Management of ETHG and DEG poisoning includes administration of ethanol, fomepizole and haemodialysis4,5. Early diagnosis is essential to prevent morbidity and mortality. Since the clinical indications of poisoning are non-specific, rapid confirmation by detection of ETHG and/or DEG in blood is crucial7-8.

References