

Ethylene Glycol

Synonyms

Antifreeze, coolant, brake fluid.

Clinical Indication

Ethylene glycol is very toxic and a fatal dose is approximately 90 mL of pure ethylene glycol (commercial products vary in their concentration of ethylene glycol). Peak concentrations occur 1 to 4 hours after ingestion and it is metabolised to glyoxylic and oxalic acids which are responsible for its toxic effects (acidosis, renal failure, cerebral oedema).

Patients will develop high osmolal gap as they absorb ethylene glycol over the first few hours. Thereafter as the glycol is metabolized to acids the osmolal gap will fall and acidosis worsens. A severely poisoned patient can present early with normal pH; however their osmolal gap will be high. Conversely, absence of an elevated osmolal gap does not exclude serious poisoning since the osmolal gap begins to fall once the ethylene glycol is metabolized in the later stages of poisoning. An elevated anion gap suggests late presentation as a result of development of metabolic acidosis.

An information sheet is available from National Poisons Service ([Toxbase](#))

Agreed with Consultant Biochemist in suspected ethylene glycol overdose.

Part of Profile / See Also

Request Form

Combined Pathology manual Blood form or ICE request

Availability / Frequency of Analysis

Referred test: Analysed by Toxicology Laboratory, City Hospital Birmingham, if specific criteria met. [8407](#). Please note that this assay is not readily available and antidote therapy (either ethanol or fomepizole) must not be withheld whilst waiting for a result. Urgent ethanol levels are available to monitor ethanol treatment, but the laboratory must be contacted in advance.

Turnaround Time

3 to 4 days (same day analysis available if required but must be discussed with the duty biochemist on ext 3539/3025 at Basildon Hospital for ext 8795 at Southend Hospital).

Patient Preparation

Sample Requirements

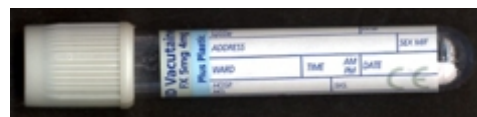
Specimen Type

Plasma

Volume

2 ml

Container



Grey top (Fluoride oxalate) tube.

Or paediatric fluoride oxalate **Yellow top** – Sarstedt tube)



Or Paediatric fluoride oxalate (grey top – BD Microtainer tube).

Yellow top (SST gel) tubes must not be used as this may cause a false positive result.

Reference Range & Units

mg/L

Interferences

Interpretation & Clinical

Severe clinical effects are associated with concentrations >500 mg/L.

Decision Value (if applicable)

References

<http://www.cityassays.org.uk/swbhtoxicology/>

Test code

SAS

Lab Handling

Aliquot 500ul and store in referrals rack at 4°C. If request is urgent (i.e. ? overdose/toxicity) then contact a duty biochemist if out of hours to determine if an urgent courier is required to take the sample to the referral laboratory. Otherwise, samples are sent daily by Royal Mail to City Hospital Birmingham.

