

Caffeine is an adenosine receptor antagonist, and phosphodiesterase antagonist. Massive caffeine overdose can cause life-threatening seizures and arrhythmias.

Toxicity / Risk Assessment

Severe toxicity is unusual unless massive ingestion

> 30 mg/kg: mild/moderate toxicity

> 100 mg/kg: severe toxicity

> 150 mg/kg: life-threatening toxicity

Caffeine Preparations:

- Energy drinks (generally range 50-100mg/250ml)
- Pharmaceuticals, often in combination with analgesics
- Adulterant in party / illicit drugs
- Caffeine powders: often highly concentrated (80-100%)

Clinical features:

Onset of clinical effects is usually within 2-4 hours

Toxicity may last 24-36 hours following large exposures

GI - nausea, vomiting (can be protracted)

CVS - tachycardia, hypotension, arrhythmias, AMI

CNS - tremor, anxiety, agitation, seizures

Metabolic – respiratory alkalosis (↑ ventilation), ↓K⁺,
metabolic acidosis (catecholamine excess, ↑lactate),
↑BSL, ↑Ca²⁺

Other – rhabdomyolysis

Management

Aggressive supportive care is the mainstay of management

Decontamination: Offer activated charcoal 50 g if < 2 hours post ingestion

Fluid & Electrolytes:

IV fluid replacement if dehydrated from vomiting or as initial treatment of hypotension

If ↓K, **replace with caution**. Aim K⁺ 3.0-3.5 mmol/L as ↓K⁺ is due to intracellular shift & not K⁺ loss.

Significant potential for rebound ↑K⁺

Seizures:

Diazepam 5 mg IV every 5 minutes as necessary

Agitation:

Benzodiazepines: Diazepam 2.5-5 mg IV q10 minutes or 5–10 mg PO q30 minutes

Arrhythmias (SVT, VT, or refractory VF):

Esmolol (500 mcg/kg IV over 1 minute, followed by 25 – 200 mcg/kg/min infusion as required)

Adenosine may also be used for SVT but higher doses may be required

Enhanced Elimination:

Multi-dose Activated Charcoal (MDAC, see separate guideline) (25g every 2 hours): consider in ingestions > 50mg/kg

Consider haemodialysis if severe refractory toxicity (discuss with clinical toxicologist)

Disposition:

Reported ingestion > 30 mg/kg or symptomatic patient: observe for at least 6 hours