

Caffeine Overdose

The MPC was recently called by the mother of a teenager who drank 3 mouthfuls of an energy drink one hour previously. He was complaining of nausea, dizziness, sweating, and feeling as if his heart was racing. Upon further investigation that included calls to the manufacturer, it was determined that he drank Redline Concentrate, a dietary supplement promoted as a "fat burner". The manufacturer's recommended dose is 2.5 mL twice/day or 5 mL once/day. It was estimated that the teen ingested approximately 45 mL in 3 mouthfuls, or 1125 mg caffeine. He was referred to his local emergency department where he was given IV fluids, observed, and discharged six hours after the ingestion.

Caffeine is considered the most widely used psychoactive substance, found in coffee, teas, soft drinks and energy drinks. The amount of caffeine in these beverages varies (see table). Redline Concentrate contains 25 mg/mL caffeine (6000 mg/240 mL bottle). OTC stimulants, widely used by students and those in occupations requiring being awake for many hours, typically contain 100-200 mg caffeine. Guarana, a natural product found in herbal supplements and drinks, is 3-5% caffeine. Caffeine is a methylxanthine, similar to theobromine and theophylline. Methylxanthines induce the release of catecholamines, stimulating beta 1 and beta 2 receptors. In overdoses, caffeine also inhibits phosphodiesterase, increasing cAMP levels. Beta receptor stimulation and elevated cAMP levels result in adrenergic stimulation within 30-60 minutes of ingestion. Most exposures result in mild symptoms such as nausea, vomiting and restlessness, but more serious effects have been seen with doses larger than 1 gram in adults (> 40 mg/kg in children): tremor, seizures, tachycardia, dysrhythmias, hypotension, diuresis, hypokalemia and metabolic acidosis. Treatment consists of activated charcoal if the patient presents soon after the ingestion, and supportive care.

Product	Amount of caffeine
Coffee (brewed)	60-180 mg/5 oz cup
Espresso	100 mg/ 1.5-2 oz serving
Tea (brewed)	20-100 mg/ 5 oz cup
Cola	30-50 mg/ 12 oz can
Energy drinks	40-70 mg/ 8 oz
Redline Concentrate	25 mg/ mL; 6000 mg/ 240 mL bottle
Vivarin	200 mg/tablet
No Doz	100 mg/tablet

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DID YOU KNOW THAT... the FDA recently warned health professionals of confusion in administering EDTA products?

There are two medications commonly referred to as "EDTA": Edetate calcium disodium (calcium disodium versenate, calcium EDTA), used for chelation therapy in patients with lead poisoning, and edetate disodium (Endrate), approved for use in patients with high blood calcium levels and used in the past for digoxin toxicity. There have been serious effects and deaths following the administration of the wrong drug. It is recommended that hospital pharmacies reevaluate the need to stock edetate disodium.



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