



### K30 An Unusual Case of Homicide by Chronic Methanol Poisoning

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The goal of this presentation is to present the forensic community with an unusual agent and method of homicide due to chronic methanol poisoning.

This presentation will impact the forensic community and/or humanity by alerting toxicologists that methanol can be used as an agent of murder and is often initially misdiagnosed. In addition, it will alert the community that beverages can be used as a route to administer poisons chronically.

An unusual case of homicide by chronic methanol poisoning is presented. Prior to his poisoning, the victim a 37 yr-old man, was in good health and physically active, exercising and playing sports. Approximately, one month prior to his death, he complained of intermittent gastric distress, nausea, and episodes of shortness of breath. When his symptoms first developed, his physician considered heart disease; however, he underwent a stress echocardiogram that yielded normal findings. After a family gathering, the victim awoke the next morning "feeling sick." Despite burning in his throat, nausea, and shortness of breath he went to work; however, his symptoms increased during the day and he returned home. His gastric distress worsened, he vomited ten times, and his breathing became labored, at which point EMT's were called and he was transported to the hospital. On admission, he complained of severe gastrointestinal pain and tenderness, he was diaphoretic, tachycardic, mentally confused, and tachypneic with labored breathing. Initial chemistries revealed a severe metabolic acidosis; pH 7.07;  $\text{HCO}^-$ , 2.3 meg/L;  $\text{pCO}_2$ , 8.0 mm Hg; glucose, 181 mg/dL. His calculated ion gap was 28 and osmol gap was 28. Serum toxicology findings were: methanol, 750 mg/L; other volatiles including ethanol, negative; ethylene glycol, negative; salicylate 2.8 mg/dL; acetaminophen and tricyclic antidepressants, negative. Despite hemoperfusion and ethanol antidote administration, the patient developed multi-organ failure and was pronounced dead two days after admission. The investigation revealed that the victim had no occupational or recreational exposure to methanol. The victim had a history of ingesting the nutritional supplement creatine. His wife would mix a large tablespoonful of this powder into 20 fluid ounce bottles of Gatorade. The victim had ingested such a bottle of Gatorade the evening before his hospitalization. Police recovered a bottle of prepared creatine/Gatorade from the victim's home refrigerator, two more bottles from a refrigerator at the victim's workplace and a 1/3 full bottle on his desk at work. All these items were found to contain approximately 1 fluid ounce of pure methanol. The recent medical history of the victim and toxicology findings were consistent with chronic exposure to methanol with increasing or an increased dose resulting in a fatal accumulation of the toxic metabolite formic acid. His continued physiological deterioration prior to and during his hospitalization, despite heroic treatment, is consistent with the delayed severe toxicity of methanol. The family member was convicted on charges of "first degree murder."

#### **Homicide, Methanol, Poisoning**