



H107 Death Due to Bowel Obstruction Secondary to Raw Poppy Seed Ingestion

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After attending this presentation, attendees will understand different methods of poppy seed consumption, the toxicological findings commonly associated with them, the risk factors associated with consuming poppy seed foods, and the potential medicolegal issues surrounding the recreational use of poppy seeds to get high.

This presentation will impact the forensic science community by providing an example of a rare complication of poppy seed consumption and discussing recent literature regarding deaths due to the ingestion of poppy seed tea.

A 54-year-old woman with a history of epilepsy and benzodiazepine dependence was found unresponsive at home. Despite aggressive Cardiopulmonary Resuscitation (CPR), she was pronounced dead at a local emergency room. Family reported she had been experiencing one to two days of intractable vomiting. Her prescriptions included codeine, morphine, and meperidine. At autopsy, brown-black, kidney bean-shaped seeds (1mm) with pitted surfaces were noted around the groin and medial thighs. Internal exam revealed 1,500 ml of identical raw seeds forming a cast-like obstruction extending from her cecum to descending colon. Her postmortem blood morphine level was <10ng/ml. Vitreous fluid was negative for drugs and both blood and vitreous fluid were negative for alcohol. Investigation revealed the decedent had ordered and ingested large quantities of raw poppy seeds days prior to her death.

Seeds from the opium poppy, *Papaver somniferum*, are legally sold and safely consumed around the world in a variety of food preparations; however, recent attempts are being made to consume poppy seeds to achieve an opiate high. Although the poppy seed itself does not naturally contain significant amounts of morphine or codeine, contamination during harvest has been shown to significantly increase the drug concentration on the seeds, ranging from 1.5mg - 294mg morphine per gram of seed and 0.4mg - 294mg codeine per gram of seed.^{1,2} The variability in drug level depends on the poppy's variety, geographical location, and specific method of harvest.^{1,2}

The normal commercial method of poppy seed use (i.e., baking) has been shown to remove up to 50% of the opiate content on the seed surface, minimizing the concern for opiate toxicity; however, eating the seeds raw, may have the potential to deliver large amounts of opiates, thus increasing the risk.³ Studies aimed at measuring morphine levels in subjects after eating raw poppy seeds have reported that the seeds are often unpalatable in large quantities, possibly explaining the rarity of cases like the one mentioned above. Although the patient's postmortem morphine level was too low to cause death, it does not eliminate the possibility that she may have experienced a 'high' within hours of consuming the seeds, several days prior to death.

Poppy Seed Tea (PST) has historically been responsible for numerous deaths while being used as a remedy for various medical conditions.³ More recently, deaths have been attributed to PST in individuals who prepared and consumed the tea with little knowledge or control over its potency.⁴ Additionally, these cases often involve concomitant use of other medications, such as benzodiazepines, which potentiate the adverse side effects of opiates and complicate investigation into the exact role that PST played in the death of these individuals.⁴

In conclusion, recent abuse of poppy seeds poses a unique set of challenges for the forensic community. The low cost, legal availability, and oral route of administration makes poppy seeds an accessible alternative for opiate



Pathology/Biology - 2017

abuse outside of prescription narcotics and heroine and should be considered as a potential cause of death in cases of opiate toxicity without evidence of prescription or street drug abuse.

References:

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3. Karch, Steven B., Drummer, Olaf H. *Pathology of Drug Abuse. 5th ed.* Boca Raton: CRC, 2016. Print.
4. Kristen Bailey et al. Fatality Involving the Ingestion of Phenazepam and Poppy Seed Tea. *J Anal Toxicology* (2010) 34 (8): 527-532.

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