

# A Homicidal Attempt - Potassium Thiocyanate: A Rare Case Report



**R Rajiv<sup>1\*</sup>, GThirunavukkarasu<sup>2</sup> and D Shanmugam<sup>3</sup>**

<sup>1</sup>Scientific Officer, Regional Forensic Science Laboratory, India

<sup>2</sup>Deputy Director, Forensic Sciences Département, India

<sup>3</sup>Deputy Director, Regional Forensic Science Laboratory, India

**Submission:** November 19, 2019, **Published:** November 26, 2019

**\*Corresponding author:** R Rajiv, Scientific Officer, Regional Forensic Science Laboratory, Villupuram, India

## Abstract

Forensic Toxicologist does tremendous work to find out various poisonous substances from Viscera to other materials pertaining to the crime cases. Potassium Thiocyanate (CAS number 333-20-0) is the chemical compound with the molecular formula KSCN. It is a colourless deliquescent crystals. In this case, one borrower offered a packed Gulab Jamun (Sweet) box to the money lender while returning the borrowed money. While the lender was tasting the sweet, he found some different taste, so he spat and subsequently he rushed to hospital. A criminal case has been registered in this regard, and the case article (Gulab jamun) was forwarded to our Forensic Science Laboratory by the investigating agency. After the scrupulous analysis, Potassium Thiocyanate was detected in the content of the said item.

**Keywords:** Forensic science; Toxicological analysis; Potassium thiocyanate; Gulab jamun

## Introduction

The role of Forensic Toxicologist is to find out various poisonous substances from viscera and other materials pertaining to the crime cases. Potassium Thiocyanate (CAS number 333-20-0) [1] is the chemical compound with the molecular formula KSCN. It is a colourless deliquescent crystal. Its oral Leathal dose (LD 50) is 854 mg/kg for Rat [2]. In this case one borrower offered a packed Gulab jamun (Sweet) [3] box to the money lender while returning the borrowed money. While the lender tasting the sweet, he found some different taste, so he spat. A criminal case has been booked in this regard, and the case article (Gulab jamun) was forwarded to our Forensic Science Laboratory by the investigating agency. After the scrupulous analysis, Potassium Thiocyanate was detected in the content of the said item.

## Case Report

The man who was a money lender, extended the monetary support to his close friend for certain percentage of interest. The borrower was not in a position to return the amount with the interest due to some personal reasons, as a result of which the lender insisted him very often in person and over phone to return the amount, but in vain. The irritated borrower caught a conspiracy to kill him in an unsuspecting manner. One day without expressing any reaction the borrower went to lender's

home to return some money and offered a sweet box full of Gulab jamun after a long chat. The lender happily accepted the offer as the borrower appealed to him to take some pieces as a mark of respect to the friendship, while consuming the first piece, the lender could feel that completely changed in its taste realizing that something was wrong in the sweet, the lender spat the piece and he immediately rushed to the hospital as his subconscious mind warned him that it was a cunning attempt to kill him. After the preliminary investigation, a criminal case (Attempt to Murder - 307 IPC) [4] was registered against the borrower. Suspected sweet box was forwarded to the Regional Forensic Science Laboratory to detect any poisonous substances by investigating officer.

## Forensic Examination

The analyst in Toxicology division, the corresponding author, received the suspected sample for the toxicological examination. Examination was conducted to rule out various poisons: Metal poison (Arsenic, Antimony, Bismuth, Mercury), Cyanide, Rat poison (Yellow Phosphorous, Zinc Phosphide, Aluminium Phosphide), Pesticides (Organophosphorous compounds, Organochlorinated compounds, Carbamate compounds, Pyrethroid compounds), Plant poisons (Oleander, Oduvan, Madar, Nux Vomica, etc.,) and Drugs. Negative results was the

answer for all the said poisons. Usually test result for Cyanide [5] using Ferrous sulfate and Ferric chloride, produces Prussian blue formation which indicates the presence of Cyanide. Similarly, a black formation is found while ferrous ion reacts with sulfide ion. But in this case a blood red colour formation was found. With this suspected result we started the further analysis. It was found thiocyanate ion gives red colour with ferrous ion [6]. With this clue we conducted the test for Thiocyanate ion [7] in the suspected sweet, positive result was obtained. Similarly, Thiocyanate was quantified using Vohlard Titration Method [8]. The corresponding cation, Potassium ion was identified by Micro chemical test [9]. Finally, 53.8 g Potassium Thiocyanate detected quantitatively in suspected Gulab Jamun container.



Figure 1: Suspected Gulab Jamun container



Figure 2: Suspected Gulab Jamun Container.

## Discussion

Routine toxicological analysis ruling out poisons like Metal poison (Arsenic, Antimony, Bismuth, Mercury), Cyanide, Rat poison (Yellow Phosphorous, Zinc Phosphide, Aluminium Phosphide), Pesticides (Organo phosphorous compounds, Organochlorinated compounds, Carbamate compounds, Pyrethroid compounds), Plant poisons (Oleander, Oduvan, Madar, Nux Vomica, etc.,) and Drugs. But in this case a new intruder Potassium Thiocyanate was detected from the suspected case article. Because of the indication from the regular cyanide test. So, we can't easily rule out merely examining for all regular poisons. It is a new indication for another type of poison present in this region. The red colour formation from the sample while it reacts with Ferrous ion, is an eye opener in this case. As a forensic toxicologist we cannot easily pass the analysis without interpreting the positive results.

## Conclusion

The present rare case, after a complete workout, turned out to be a case of Potassium Thiocyanate poisoning. Because of its physical property people are not aware of this poisonous substance which is an advantage for the criminal intention persons. This case is very rare and new to this region, so this is to inform our society that, a colourless odourless poisonous substances also exist, which is fatal to humans.

## References

1. <https://chem.nlm.nih.gov/chemidplus/rn/333-20-0>.
2. Robert C Anderson, KK Chen (1940) Absorption and Toxicity of Sodium and Potassium Thiocyanates. Journal of the American Pharmaceutical Association Scientific 29(4): 152-161.
3. Indian Standard Specification for Packed Gulab Jamuns pp. 11602-1986.
4. (1860) The Indian Penal Code
5. Svehla G (1979) Vogel's textbook of macro and semimicro qualitative inorganic analysis. (5<sup>th</sup> edn.), The Chaucer Press, Great Britain, pp. 314.
6. Svehla G (1979) Vogel's textbook of macro and semimicro qualitative inorganic analysis. (5<sup>th</sup> edn.), The Chaucer Press, Great Britain, pp. 318.
7. Svehla G (1979) Vogel's textbook of macro and semimicro qualitative inorganic analysis. (5<sup>th</sup> edn.), the Chaucer Press, Great Britain, pp. 317-319.
8. Vogel's Textbook of Quantitative Chemical Analysis (1989) edited by GH Jeffrey, New York, NY Wiley, (5<sup>th</sup> edn.), pp. 353-354.
9. Chamot, Emil Monnin, Mason, Clyde Walter (1946) Handbook of chemical microscopy - Chemical methods and inorganic qualitative analysis. John Wiley & Sons Inc. Republ. (2<sup>nd</sup> edn).



This work is licensed under Creative Commons Attribution 4.0 License  
DOI: [10.19080/JFSCI.2019.12.555857](https://doi.org/10.19080/JFSCI.2019.12.555857)

## Your next submission with Juniper Publishers will reach you the below assets

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats  
**( Pdf, E-pub, Full Text, Audio)**
- Unceasing customer service

**Track the below URL for one-step submission**  
<https://juniperpublishers.com/online-submission.php>