

INTRODUCTION

Rohypnol, commonly known as “Roofies” is used both recreationally and in cases of drug-facilitated sexual assault¹. When combined with alcohol, only small amounts are required to produce sedative effects². A low dosage of Rohypnol may be difficult to detect within the body as time after the drug event increases. As one of the top 10 drugs used to facilitate sexual assault, it is imperative to understand where and when Rohypnol can be detected in the body³.



Fig. 1 An image of two capsules of Rohypnol⁴.

BACKGROUND

Flunitrazepam is an illegal, addictive substance that affects mental processes such as mood, perception, and consciousness⁵. One of the most potent symptoms is anterograde amnesia, or memory loss which prevents victims of the drug to recollect their memories after regaining consciousness⁶. However, when the drug is consumed, it is broken down in the liver to produce by-products, called metabolites, such as 7-aminoflunitrazepam (7-AFN)⁵. The half life of this molecule is approximately 13 to 19 hours, allowing for detection in the body after consumption¹.

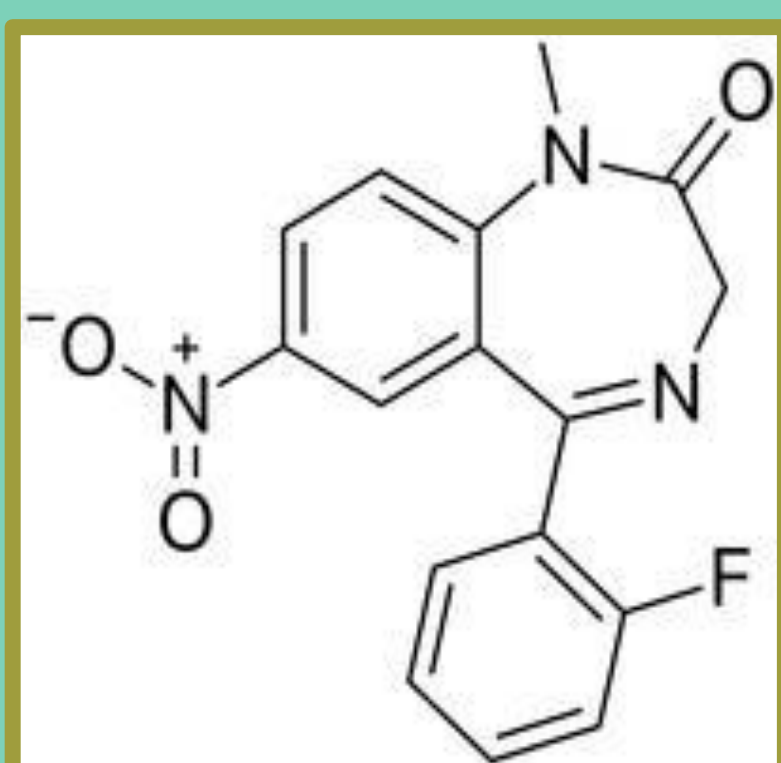


Fig.2 Structure of Rohypnol (Flunitrazepam)¹.

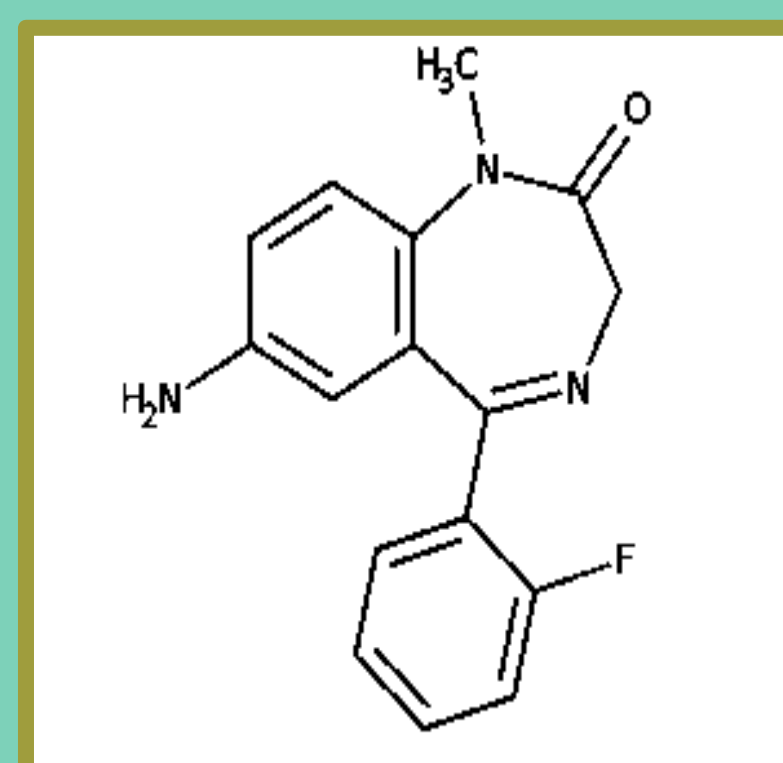


Fig. 3 Molecular structure of Rohypnol metabolite (7-aminoflunitrazepam)⁷.

RESEARCH QUESTION:

HOW EFFECTIVE ARE URINE, BLOOD AND HAIR ANALYSES IN THE DETECTION OF ROHYPNOL IN THE BODY?

METHODS

A meta-analysis was conducted to study how long the main metabolite of Rohypnol (7-AFN) resides in different areas of the body. We extracted data from three studies that used gas chromatography and mass spectroscopy (GC/MS) to detect concentrations of 7-AFN in urine¹, blood⁸, and hair⁹ after administering a standard dose. We graphed the extracted data to assess which bodily substance contained the highest concentration of Rohypnol’s main metabolite at a given time.

RESULTS

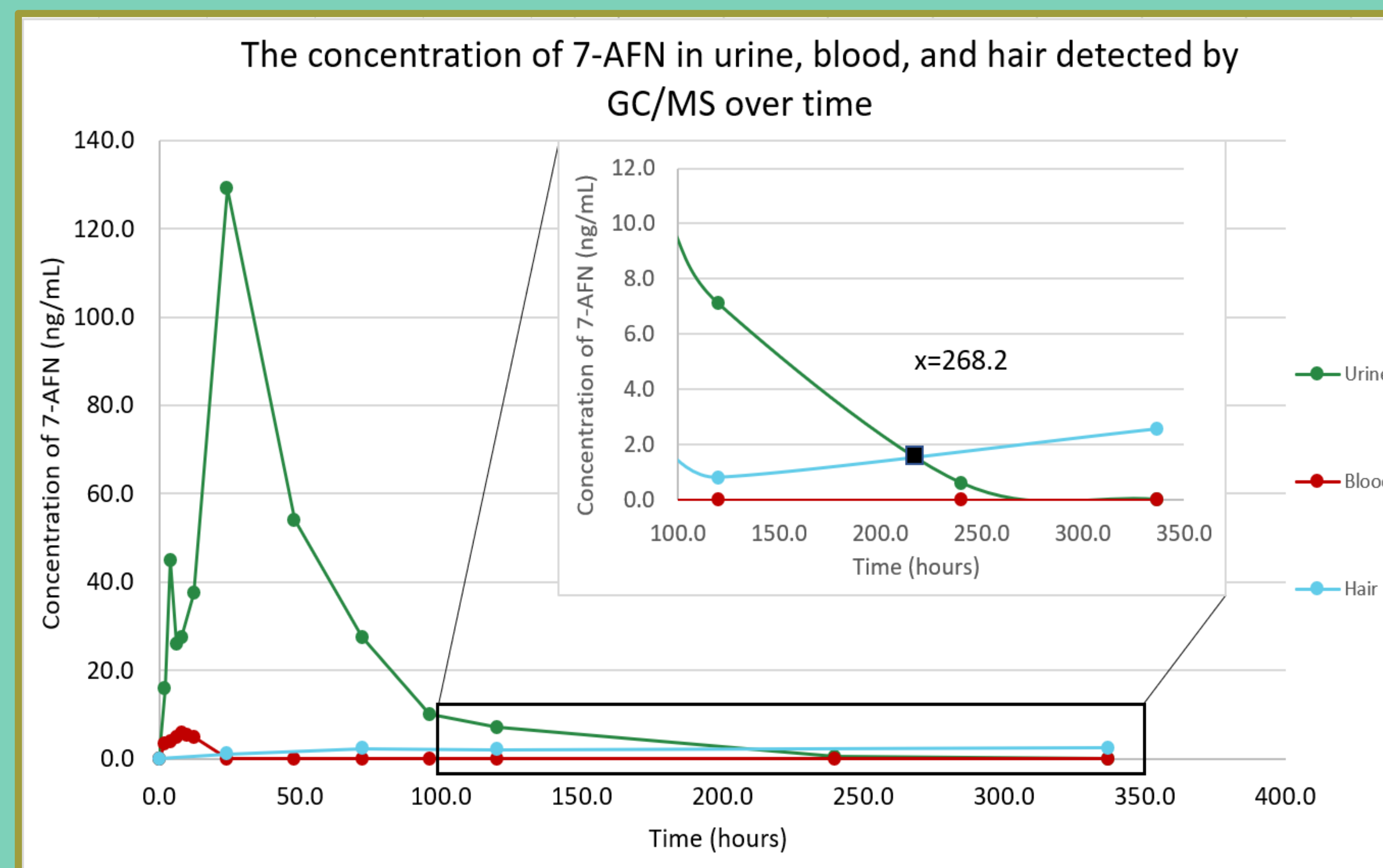


Fig. 4 Varying concentrations of the main metabolite of Rohypnol (7-AFN) detected in urine¹, blood⁸, and hair⁹ in a period 336 hours (two weeks).

ANALYSIS

The combination of the studies’ results shows the varying concentrations of 7-AFN found in the urine, blood and hair within a 336 hour time frame (14 days). Evidently, the highest concentrations of 7-AFN were found in urine, with values up to 130 ng/mL. The next highest concentrations of 7-AFN were detected in blood. The graph identifies peaks in both urine and blood before 24 hours. From that point onwards, the concentration of 7-AFN quickly decreases. However, the graph reveals that 24 hours must pass before 7-AFN can be detected in hair. After 24 hours, the concentration of 7-AFN fluctuates in hair and overall increases over time; it surpasses the concentration of 7-AFN in urine at 268.2 hours as shown by the intercept of the urine and hair curves in Figure 1 (11.17 days).

CONCLUSION

Based on the results of this study, urine tests proved to be more effective in detecting Rohypnol within approximately 11 days of consumption. However, after 11 days, hair proved to be more effective in the detection of Rohypnol for up to two weeks. Knowing how to best detect Rohypnol in the body can be useful for individuals who suspect that suspect that they have been drugged, to help determine the best course of action to assess the situation.

LITERATURE CITED

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- ⁷ [7-aminoflunitrazepam] n.d. [image online]. www.hmdb.ca/metabolites/HMDB0041818.
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