

## “Sanitizer a Lockdown Hooch! – A Case Series”

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### Abstract

What began as a mysterious infectious outbreak in Wuhan in Dec 2019 soon engulfed the entire globe. The whole of India was placed under a complete lockdown (25 March to 14 April 2020) to prevent the further spread of coronavirus disease. In the absence of any definitive drug or vaccine for the disease, people seem to be trying novel methods to contain the virus which is proving fatal. Hand hygiene products are heavily used in community and healthcare settings in everyday life to maintain hand hygiene. During the lockdown period, many alcoholics suffered acute withdrawal and delirium episodes. WHO and FDA recommended alcohol-based hand sanitizers for frequent hand hygiene which contain mainly ethanol, isopropyl alcohol, and hydrogen peroxide in varying proportions<sup>1</sup>. Methanol must never be used in such a product because oral, pulmonary, and skin exposure can result in severe local and systemic toxicity and even death<sup>2</sup>. More than 4% methanol must be labelled as poison<sup>3</sup>. In a recent study by the Mumbai-based Consumer Guidance Society of India, 122 hand sanitizer tested, 37% were of poor quality and 4% contained the toxic chemical methanol<sup>4</sup>. Instead of liquor, these addicts resorted to consuming hand sanitizers. We have encountered six cases of sanitizer poisoning during the lockdown period from 24<sup>th</sup> March to 3<sup>rd</sup> May 2020 in KIMS Hubballi, Karnataka. Here we discuss a case series of poisoning due to the consumption of the sanitizer – a novel *Hooch* in the lockdown period.

**Keywords:** Sanitizer, Hooch, Lockdown, Poisoning.

### Introduction

Methanol (CH<sub>3</sub>OH), which has long been used in mummification in ancient Egypt, was obtained

from the distillation of wood, which in Greek roots was called methylene or wood wine<sup>9</sup>. It is a toxic alcohol used as a solvent or in denatured industrial alcohol. Methanol production reached industrial

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scale in 1923 and has found wide applications in various consumer industries, such as model cars, airplane fuel, perfumery, copy machine fluid, gas line antifreeze ("dry gas"), etc.<sup>10</sup> Following the coronavirus disease 2019 (COVID-19) pandemic in Iran (February 19, 2020 to April 27, 2020), there has been a significant increase in methanol-induced morbidity and mortality. This was the greatest prevalence of methanol mass poisoning in the country in recent periods. Because methanol is less expensive and more readily available than ethanol, some fraudsters in Iran use it instead of ethanol in home-made alcohol. Therefore, it is important to increase public knowledge about the deadly consequences of consuming fake alcohol sold on the black market<sup>11,12</sup>. The most common cause of methanol poisoning in India is adulteration of alcoholic drinks. These alcoholic drinks are illicit liquor produced by unauthorized persons. Methanol claims to give early kick when mixed with alcohol. Hence, adulteration is done. Secondly, it is cheaper than ethanol, which makes it suitable for mixing. Methanol ingestion is an uncommon form of poisoning that can cause severe metabolic disturbances, blindness, permanent neurologic dysfunction and death. While methanol itself may be harmless, it is converted in vivo to the highly toxic formic acid<sup>13</sup>. We have encountered six cases of sanitizer poisoning during the lockdown period from 24<sup>th</sup> March to 3<sup>rd</sup> May 2020 in KIMS Hubballi, Karnataka.

### Case series

A 45-year-old male patient presented with complaints of loss of consciousness and vomiting with a history of consumption of hand sanitizer. On examination, the patient was unconscious, with poor respiratory effort and gasping. His vitals were not stable. The patient was intubated immediately and he died within one hour. Postmortem examination findings are mentioned in Table 1. Blood and viscera are preserved and sent to Regional Forensic Science Laboratory (RFSL), reports mentioned in Table 3.

A 42-year-old male patient presented with complaints of loss of consciousness with a history of consumption of hand sanitizer. On examination, the deceased was unconscious, with poor respiratory effort and gasping. At the time of admission, his pulse rate was feeble, saturation was 50% in room air and blood pressure was low. The patient was intubated immediately, and despite all efforts,

the patient died within one hour. Postmortem examination findings are mentioned in Table 1. Viscera are preserved and sent for histopathological examination, reports mentioned in Table 2. Blood and viscera are preserved and sent to RFSL, reports mentioned in Table 3.



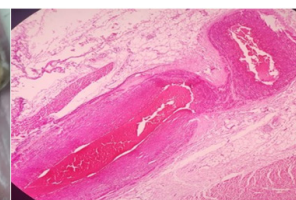
**Figure 1: Petechial haemorrhage in the left ventricle**



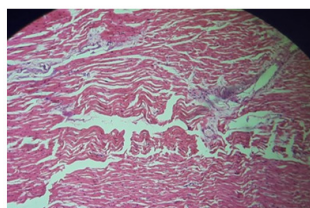
**Figure 2: Stomach contains green colour fluid**



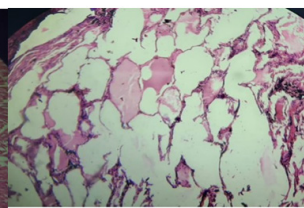
**Figure 3: Mucosa of stomach - Congested**



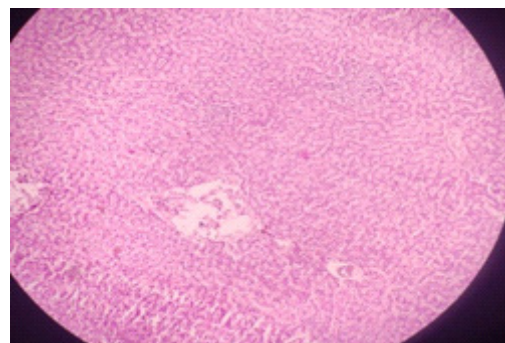
**Figure 4: Section from coronaries showing occlusion**



**Figure 5: Section from myocardium showing waviness of fibres**



**Figure 6: Section from lungs showing pulmonary oedema**

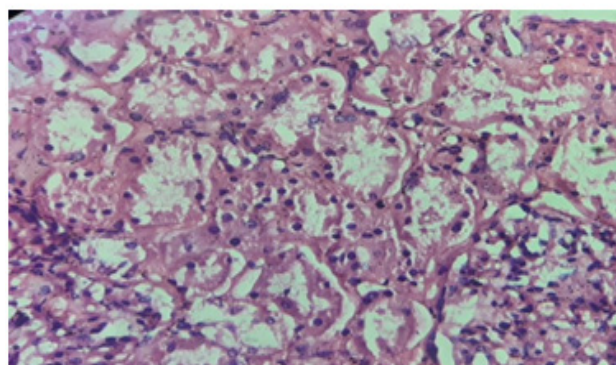


**Figure 7: Section from liver showing fatty liver with portal hepatitis.**

A 47-year-old female patient presented with complaints of loss of consciousness and convulsion with a history of consumption of hand sanitizer. On examination, the patient was unconscious and gasping. His vitals were not stable. The patient was intubated immediately, and despite all efforts, the patient died within four hours. Postmortem examination findings are mentioned in Table 1. Viscera are preserved and sent for histopathological examination, reports mentioned in table-2. Blood and viscera are preserved and sent to RFSL, reports mentioned in Table 3.



**Figure 1: Hand Sanitizer.**

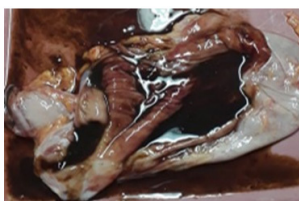


**Figure 6: Section from kidney shows Acute tubular necrosis.**

A 45-year-old male presented with complaints of loss of consciousness, convulsion and syncope with a history of consumption of hand sanitizer. On examination, he was unconscious and had poor respiratory effort. His vitals were not stable. The patient was intubated immediately, and despite all efforts, the patient died after 1 day. Postmortem examination findings are mentioned in Table 1. Blood and viscera are preserved and sent to RFSL, reports mentioned in Table 3.

A 50-year-old male presented with complaints of convulsion, gasping and syncope with a history of consumption of hand sanitizer. On examination, he was unconscious, with a feeble pulse, saturation not recorded and poor respiratory effort. The patient was intubated immediately, and despite all efforts, the patient died within two and a half hours. Postmortem examination findings are mentioned in Table 1. Blood and viscera are preserved and sent to RFSL, reports mentioned in Table 3.

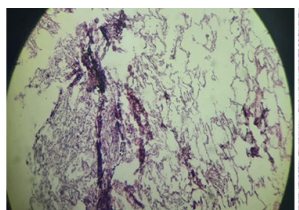
A 29-year-old male patient was admitted with a history of consumption of hand sanitizer. On examination, the patient was conscious and stable. He was admitted for 3 days in our hospital and went against medical advice. Then he was admitted to a rehabilitation centre for withdrawal symptoms and recovered spontaneously.



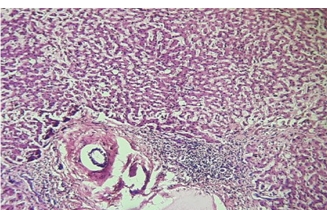
**Figure 2: Stomach contains reddish colour fluid.**



**Figure 3: Mucosa of Haemorrhagic.**



**Figure 4: Section from lungs shows Interstitial Pneumonia.**



**Figure 5: Section from liver shows Acute hepatic injury.**

**Table 1: Postmortem findings.**

	Case 1	Case 2	Case 3	Case 4	Case 5
Larynx & Trachea	Froth present.	Congested	Congested	Congested	Yellowish discolouration of epiglottis.
Lungs C/S	Voluminous & congested. Blood stained frothy fluid.	Voluminous & congested. Blood stained frothy fluid.	Voluminous & congested. Blood stained frothy fluid.	Voluminous & congested. Minimal blood stained fluid.	Congested. Blood stained frothy fluid.
Heart	Congested	Congested	Surface shows petechial spots.	Enlarged.	Congested
Stomach Smell Mucosa	150ml of watery fluid. Present Congested	100ml of brown colour fluid Present Haemorrhagic	100 ml of green colour fluid Present Haemorrhagic	250 ml of watery fluid. Absent Congested	50 ml mucoid dark fluid Present Thinned out at greater curvature.
Liver	Fatty changes	Congested	Congested	Congested	Fatty changes

**Table 2: Histopathological findings.**

	CASE 2	CASE 3
Heart	Myocardial infarction of left ventricle. Pericardium- Dense areas of haemorrhage. Coronary arteries- Occluded (Figure- 4)	Unremarkable.
Lungs	Pulmonary Oedema with early changes of acute lung injury. (Figure- 6)	Interstitial pneumonia. (Figure- 4)
Liver	Fatty liver with portal hepatitis (Figure- 7)	Acute hepatic injury (Figure- 5)
Kidney	Acute tubular necrosis	Acute tubular necrosis (Figure- 6)

**Table 3: Methyl alcohol in blood.**

	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
RFSL REPORT	Methyl alcohol- 82.26mg/100ml blood. Ethyl alcohol- 12.53mg/100ml blood(8 & 1/2hrs after death)	Methyl alcohol- 53.95mg/ml blood.(18hrs after death)	Methyl alcohol- 71.75mg/100ml blood.(10hrs after death)	Negative (11hrs after death)	Phenol (12hrs after death)

### Discussion

Alcohol-based hand rubs should not contain methanol for obvious reasons. The unexpected presence of methanol poses a series threat to public health. During the lockdown period, many alcoholic dependents suffered acute withdrawals

and delirium episodes. Some of them struggled hard to fight their addictions to alcohol as all liquor shops have been closed down<sup>14</sup>. Instead of liquor, these people had resorted to hand sanitizers as novel hooch. Methanol has a weak ability to kill viruses but can be toxic to humans. When a person is exposed to methanol, it is absorbed through the

skin, stomach, or lungs. Methanol itself is not highly toxic, but it is metabolised to toxic metabolites. 10 – 30ml of methanol can lead to death for an adult. It is fatal due to CNS depressant properties and effects of metabolites. Formic acid inhibits mitochondrial cytochrome C oxidase causing the symptoms of hypoxia at the cellular event and also causing metabolic acidosis. After ingestion, CNS depression, headache, dizziness, nausea, lack of coordination and confusion begin. Once initial symptoms passed second set of symptoms arose 10 to 30 hours after initial exposure to methanol including blurring of vision, loss of vision and acidosis. These symptoms result in the accumulation of toxic levels of formic acid in the blood and may progress to death by respiratory failure. Health authorities and manufacturers repeatedly remind consumers that alcohol-based hand rub is for external use only. The consumption of surrogate alcohol is a major health problem. When taken by mouth, methanol, if ever as a substitute for isopropyl alcohol or ethanol, in the hand rub will cause much greater mortality and morbidity<sup>15</sup>. We have encountered six cases of sanitizer poisoning during the lockdown period. In case number 1, 2, and 3, a high amount of methyl alcohol was found in the blood. But in case number 4 it was negative. In case number 5, though a history of hand sanitizer poisoning, however, phenol was identified in the blood. In Canada, Two Ontario residents had died after ingesting a hand sanitizer<sup>5</sup>. In USA, a 42 years old man died after ingesting a hand sanitizer<sup>6</sup>. In China, a hospital mistakenly purchased industrial alcohol for surgeons to disinfect the hands before surgery. It was used 3-5 sessions per week. There was soon skin dryness and desquamation of the areas exposed to the hand rub. Six months later, 5 surgeons in the same unit developed erythema and rash in the affected areas. Four surgeons stopped using this product and recovered spontaneously. The fifth surgeon had further exposure and he developed mild visual impairment which gradually improved after stopping this product. The sixth surgeon continued to use the hand rub until blurred vision occurred<sup>7</sup>. During the COVID 19 pandemic, Iranian media reported that nearly 300 people had died and over a 1000 fallen ill after consuming methanol amid false rumours that it can help cure the disease caused

by coronavirus<sup>8</sup>. In our cases, specific therapy was not initiated because the physician did not think of methanol poisoning in a hand sanitizer.

## Conclusion

The government should have made alternate arrangements to handle withdrawal cases. Encourage people to use soap instead of hand sanitizer. Strictly regulate and monitor commercially available hand sanitizer. Avoid locally available hand sanitizer. Awareness among healthcare professionals will facilitate the early detection, management, and prevention of poisoning incidents of public health significance. Appropriate public education is mandatory to fight the misinformation that is being spread through social media.

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**Ethical Clearance:** Nil

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