

## Green urine: A rare benign side effect of propofol

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### Abstract

Discoloration of urine is a well known occurrence in an intensive care setting, and is always a cause of concern to look out for the reason of the color, so as to differentiate between benign and pathological causes. The authors present a case of 52 year male who was noticed to be passing green colored urine probably secondary to intravenous propofol administration for induction of general anesthesia. The green color of urine due to propofol is believed to be as a result of the green phenolic metabolite of propofol produced in the liver and excreted through urine. Though this discoloration of urine is benign, non-nephrotoxic and gets reversed after discontinuation of the drug, it still raises alarm in the mind of the treating physician. This case demonstrates a rare, but benign side effect of propofol.

**Keywords:** Urine discoloration, Propofol, Green urine

### Introduction

Propofol is a short acting, intravenous hypnotic agent that is used widely for the induction and maintenance of general anesthesia and sedation in critically ill patients [1]. Urine analysis remains an integral part in evaluation of a patient and color of urine is its definitive integral part. Changes in urine color and/or appearance can be of help to the treating physician. Green color urine is one of the rare occurrences seen in hospital settings. Green color urine can be caused by medicines, ingested substances, dyes, infections, etc. [2-4]. The metabolites of propofol can cause urine discoloration. In the author's, knowledge, till date about 14 cases have been reported of propofol induced green urine [5- 9]. This case demonstrates and reminds physicians about a rare, but benign side effect of propofol.

### Case history

A 52 year male was received in surgical intensive care unit (ICU) post operatively. He had undergone a sleeve gastrectomy (bariatric surgery) for his morbid obesity, under general anesthesia. He was a known patient of systemic hypertension and diabetes mellitus, both of which were uncontrolled. On examination, he was dull,

but arousable and following commands on his arrival in the ICU. His vitals: Blood pressure- 180/90mmHg (being controlled on nitroglycerine infusion), Heart rate- 90/minute, oxygen saturation- 99% on oxygen flow @4litre/minute, temperature- 98.6°F.

His chest was clear with normal heart sounds. His blood sugars were high (350 mg %) and insulin infusion was started. It was noticed that he was passing green colored urine, with Foley urinary catheter in situ (Image1). This was alarming for the intensivists especially in a patient having uncontrolled blood sugar, as the first diagnosis which came into mind was sepsis (pseudomonas). The patient had been evaluated pre surgery and did not show any signs/report suggestive of sepsis with normal liver functions, renal functions, complete haemogram, urine routine and negative urine ketones.

The urine started to get clear spontaneously after about 3 hours and the patient also became more alert. The patient had a stable post-operative period, was mobilized after 6 hours of surgery and was shifted out of the ICU the next day and later discharged after a day from room. He is doing well and is being regularly followed up as an outpatient.

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The literature for the differential diagnosis for the causes of green colored urine was searched and it was concluded that the probable cause of green urine was because of the

use of intravenous propofol given during induction of his general anesthesia.



**Image 1: Green color urine in uro-bag**

## Discussion

There are many factors and drugs causing urine color to change and its not uncommon for the treating doctor to notice any change in urine color. Examples are many: red color urine seen haemoglobinuria or myoglobinuria, or due to taking certain food like beetroot or blackberries; orange color urine in patients taking rifampicin or phenazopyridine hydrochloride; yellow color urine in patients taking multivitamins (vitamin B complex) or having high bilirubin and also dehydrated patients ; brown color due certain medicines like phenytoin, metronidazole, nitrofurantoin ; deep purple urine in porphyria [2,3].

Though there are many causes for green urine it still raise eyebrows and sometimes becomes a cause of concern The common agents which cause greenish discoloration of urine are [3-5]:

- 1) Phenol containing compounds: promethazine, cimetidine, propofol, thymol
- 2) Dyes: indigo- blue, indigo carmine, carbolic acid, flavine derivatives
- 3) Biliverdin (in cases of long standing obstructive jaundice)
- 4) Amitriptyline
- 5) Pseudomonas infection
- 6) Indomethacin
- 7) Cemetidine
- 8) Methylene blue (bluish green)

Propofol is used in the induction and maintenance of general anesthesia, as a sedative in mechanically ventilated patients, and also for procedural sedation[1]. It is known to cause green discoloration of urine, but it's a rare effect. Propofol is mainly metabolized by conjugation in the liver into phenolic metabolites. The metabolites are then excreted in urine and may be responsible for the green color of urine [4-9].

The discoloration usually appears when the elimination of propofol through the hepatic route is exceeded [5,6,8,9]. The relieving factor for the concerned patient and doctors is that these metabolites of propofol are inactive, and the passing of green color urine is benign (non- nephrotoxic). It has been described mostly in patients who are on prolonged propofol infusion though cases have been reported with short duration of use also [5,6]. Green colored urine in the presented case was attributed to the propofol which was used for induction of his general anesthesia during his bariatric surgery. There was no other obvious cause for the same.

## Conclusion

This case demonstrates a rare, but a benign side effect of propofol, which otherwise raised a thought of concern, and can be distressing not only to the patient and patient's family but also to the treating doctors.

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