Intravenous Use of Lemon Juice with Brown Sugar: A Potentially Fatal Cook-Up Technique?

Sir,

Several cook-up techniques exist for psychoactive substance users. Opioid and cocaine are two common psychoactive substances where cook-up techniques are most frequently used. Although recent reports have documented purposive use of lemon juice among crack cocaine users with its adverse effects (e.g., candidal endophthalmitis and disseminated candidiasis), reports of the use of the same in opioid dependence are sparse.\(^1\),\(^2\),\(^3\),\(^4\),\(^5\),\(^6\)

Index patient, a 25-year-old Hindu male visited the outpatient department of center for addiction psychiatry unit at our institute with chief complaints of intake of cannabis for 7 years, intake of brown sugar for
might be responsible for Dr. Newton-Strang where the similar effect on CYP3A4 enzyme was among patients on methadone maintenance treatment. Juice modestly increased methadone bioavailability by inhibiting first-pass metabolism of oxycodone by cytochrome P450 3A4 (CYP3A4) thereby increasing the concentration of oxymorphone. Similarly, grapefruit juice modestly increased methadone bioavailability among patients on methadone maintenance treatment where the similar effect on CYP3A4 enzyme was thought to be mediating. Thus, intake of grapefruit juice together with opioid has been found to have the potential to precipitate opioid overdose in a person with opioid dependence syndrome. Citric acid which is common in both lemon juice (48 g/L)[9] and grapefruit juice (25 g/L)[10] might be responsible for this. However, grapefruit juice has been proposed to inhibit only intestinal CYP3A as it had no effect on the CYP3A substrates when given intravenously.[9,10] Although lemon juice was mixed with an intravenous preparation of brown sugar, whether similar effect of citric acid on CYP3A4 from lemon juice could occur was not clear and could be ruled out neither. Based on available research evidence, we hypothesize that lemon juice had potentiated effect of brown sugar by altering pharmacokinetics of the later. Considering the adverse effects mentioned above, more research on how these fruit juices including lemon juice exert their effect on other psychoactive properties of opioid and mode of intake and related psychoactive substances across routes of administration should be carried out to prevent any unwarranted or accidental fatalities.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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