

# Caution patients about common food–drug interactions

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Many individuals read about the health benefits of certain foods, such as coffee, grapefruit, and red wine, but psychiatrists might neglect to inform their patients that these common foods could interact with drugs, thereby preventing certain psychotropics from achieving maximum benefit or causing toxicity. Educate your patients about food–drug interactions and to refrain from alcohol and specific foods when taking psychotropics. Although far from comprehensive, we present a discussion of the most frequently encountered and preventable food/nutrient–drug interactions.

**Grapefruit juice** may alter bioavailability of many psychotropics by inhibiting cytochrome P450 (CYP) 3A4 and 1A2 isoforms, interfering with prehepatic metabolism, and enteric absorption. Common medications affected by this interaction include alprazolam, buspirone, sertraline, carbamazepine, and methadone.<sup>1</sup> Patients should be advised about eating grapefruit or drinking grapefruit juice as it could require dose adjustment to avoid drug toxicity.

**Table salt.** Lithium is a salt, and less table salt intake could cause lithium levels to rise and vice versa. Lithium and other salts compete for absorption and secretion in the renal tubules, which are responsible for this interaction. Therefore, it is advisable to keep a stable salt intake throughout treatment. Patients should be cautioned about eating salty foods during the summer because excessive sweating could lead to lithium intoxication.

**Caffeine** is a widely used stimulant; however, it can decrease blood lithium levels

and block clozapine clearance via inhibition of the CYP1A2 enzyme. Excessive caffeine intake can lead to clozapine toxicity.<sup>2</sup>

**Beef liver, aged sausage and cheese, and wine** contain tyramine. Tyramine is broken down by monoamine oxidase (MAO) enzymes in the body, which are inhibited by MAO inhibitors (MAOI) such as phenelzine and selegiline. A patient taking a MAOI cannot catabolize tyramine and other amines. These exogenous amines could cause a life-threatening hyperadrenergic crisis. Physicians should educate their patients about the MAOI diet and monitor adherence to the food avoidance list.

**St. John’s wort** is a herb commonly used for treating mild depression. It is a strong inducer of the CYP3A4 enzyme and reduces plasma concentrations and could decrease clinical effectiveness of aripiprazole, quetiapine, alprazolam, and oxycodone.<sup>3</sup> It could interact with serotonin reuptake inhibitors causing serotonin syndrome.

**Full vs empty stomach.** Food is known to affect bioavailability and enteral absorption of different psychotropics. Some medications are best taken on a full stomach and some on an empty one. For example, the antipsychotic ziprasidone should be taken with meals of at least 500 calories for optimal and consistent bioavailability. Benzodiazepines are rapidly absorbed when taken on an empty stomach.

Discuss dietary habits with patients to encourage a healthy lifestyle and provide valuable direction about potential food/nutrient–drug interactions.

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#### Disclosures

The authors report no financial relationships with any company whose products are mentioned in this article or with manufacturers of competing products.

#### References

1. Pawelczyk T, Kloszewska I. Grapefruit juice interactions with psychotropic drugs: advantages and potential risk [in Polish]. *Przegl Lek.* 2008;62(2):92-95.
2. Hägg S, Spigset O, Mjörndal T, et al. Effect of caffeine on clozapine pharmacokinetics in healthy volunteers. *Br J Clin Pharmacol.* 2000;49(1):59-63.
3. Markowitz JS, Donovan JL, DeVane CL, et al. Effect of St John’s wort on drug metabolism by induction of cytochrome P450 3A4 enzyme. *JAMA.* 2003;290(11):1500-1504.