



NUTRITION

Vitamin and mineral supplements

Friend or foe when combined with medications?

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According to the Academy of Nutrition and Dietetics, a “variety of nutrient dense foods and beverages consumed in moderation” can provide adequate calories, dietary fiber and macronutrients and micronutrients for adults and children.¹ Although diet alone provides sufficient vitamins and minerals for healthy people, Americans spent more than \$30 billion on dietary supplements in 2011, and vitamin and mineral supplements continue to be the largest growing category of dietary supplements used.^{2,3}

Examining data from the 2007-2010 National Health and Nutrition Examination Survey, Bailey and colleagues² confirmed that the primary reason for using dietary supplements was to improve or maintain overall health, which may or may not include the prevention or treatment of disease; only 22 percent of those surveyed actually consumed these agents intending to “supplement the diet.” However, in a 2013 systematic review of the literature conducted for the U.S. Preventive Services Task Force, Fortmann and colleagues⁴ concluded that there is a lack of evidence of any benefit from vitamin and mineral supplementation in the prevention of cancer or cardiovascular diseases. Grodstein and colleagues⁵ also found no evidence with regard to improvement in cognitive decline. From an oral health perspective, Lalla and colleagues⁶ explored the use of multivitamins as prophylaxis for recurrent aphthous stomatitis (RAS); they found no reduction in the frequency or duration of RAS occurrences over a one-year period in those receiv-

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ABSTRACT

Background. Given the prevalence of vitamin and mineral supplement use among consumers and the potential for vitamin- and mineral-drug interactions, as well as oral and systemic adverse effects of excess consumption, oral health care providers (OHCPs) should ask all patients about their use. The challenges for OHCPs are how to recognize oral and systemic manifestations of these interactions and how to safely manage the care of these patients while avoiding potential interactions.

Methods. The authors reviewed the literature regarding interactions between popular vitamin and mineral supplements and medications used commonly in dentistry. They used clinical databases and decision support tools to classify interactions according to their level of patient risk. They address interactions of greatest clinical concern with a high-quality evidence-based foundation in either randomized controlled clinical trials or meta-analyses.

Conclusion. Most medications used commonly in dentistry can be prescribed safely without regard to vitamin- and mineral-drug interactions. However, patients taking anticoagulants or cytochrome P450 3A4 substrates (such as clarithromycin, erythromycin, ketoconazole, itraconazole, midazolam and triazolam) in addition to specific vitamin or mineral supplements (vitamins D, E, K, calcium, fluoride, iron, magnesium, selenium or zinc) may face additional challenges. OHCPs need to recognize these potential interactions and know how to manage the care of patients who may be receiving treatment with these combination therapies.

Practical Implications. Recognition and avoidance of potential vitamin- and mineral-drug interactions will help clinicians optimize patient treatment while emphasizing patient safety.

Key Words. Vitamins; minerals; drugs; interactions; dentistry.

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BOX 1

Essential vitamins and minerals.*	
FAT-SOLUBLE VITAMINS	
■	Vitamin A
■	Vitamin D
■	Vitamin E
■	Vitamin K
WATER-SOLUBLE VITAMINS	
■	Vitamin C
■	B vitamins: thiamine, riboflavin, niacin, pantothenic acid, pyridoxine, biotin, folate, vitamin B ₁₂ (cyanocobalamin)
MINERALS	
■	Calcium
■	Chloride
■	Chromium
■	Cobalt
■	Copper
■	Fluoride
■	Iodine
■	Iron
■	Magnesium
■	Phosphorus
■	Potassium
■	Selenium
■	Sodium
■	Zinc
* Source: National Research Council. ¹⁴	

ing the multivitamin compared with results in control participants. All of these trends are of additional concern because excessive use of supplements can result in adverse oral and systemic sequelae.

DISCUSSING VITAMIN AND MINERAL SUPPLEMENT USE WITH PATIENTS

The National Institutes of Health and others have reported that more than 30 percent of Americans take dietary supplements, and as many as 20 percent of prescription drug users also use dietary supplements.⁷⁻⁹ In 2010, AARP and the National Center for Complementary and Alternative Medicine conducted a telephone survey, the results of which showed that nearly 70 percent of people surveyed did not discuss their supplement use with their health care providers.¹⁰ Given the prevalence of vitamin and mineral supplement use among consumers and the potential for vitamin- and mineral-drug interactions, as well as oral and systemic adverse effects of excess consumption, oral health care providers (OHCPs) should ask all patients about their use of vitamins and minerals.^{9,11} The challenges for OHCPs are how to recognize oral and systemic manifestations of these interactions and how to safely manage the care of these patients while avoiding potential interactions.

In this article, we examine vitamin and mineral supplement interactions with prescription medications, focusing on the vitamins and minerals that patients most

BOX 2

Medications used most commonly in dentistry.*	
ANALGESICS AND ANTI-INFLAMMATORY AGENTS	
■	Acetaminophen
■	Aspirin
■	Codeine
■	Glucocorticoids (dexamethasone, prednisone)
■	Hydrocodone
■	Ibuprofen
■	Oxycodone
ANTIBIOTICS	
■	Amoxicillin
■	Azithromycin
■	Cephalexin
■	Chlorhexidine (topical)
■	Clarithromycin
■	Clindamycin
■	Clotrimazole (topical)
■	Doxycycline
■	Erythromycin
■	Fluconazole
■	Metronidazole
■	Nystatin
■	Penicillin
■	Terconazole (topical)
■	Tetracycline
LOCAL ANESTHETICS	
■	Articaine
■	Bupivacaine
■	Lidocaine (with or without epinephrine)
■	Mepivacaine (with or without levonordefrin)
■	Prilocaine
TOPICAL ANESTHETICS	
■	Benzocaine
■	Dyclonine
■	Lidocaine
■	Tetracaine
SEDATIVES	
■	Benzodiazepines
■	Zaleplon
■	Zolpidem
OTHER EMERGENCY MEDICATIONS	
■	Albuterol
■	Aspirin
■	Diphenhydramine
■	Epinephrine
■	Flumazenil
■	Glucose
■	Naloxone
■	Nitroglycerin
■	Oxygen
* Sources: Donaldson and Goodchild ¹⁵ ; Rosenberg. ¹⁶	

ABBREVIATION KEY. CYP3A4: Cytochrome P450 3A4. DRI: Dietary reference intake. OHCP: Oral health care provider. RAS: Recurrent aphthous stomatitis.

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