



Estimation and Determination of Vitamins by Using Drugs

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DESCRIPTION

Vitamins are essential for health, but are needed in much smaller amounts than macronutrients such as carbohydrates and fats that are important for energy processing. Vitamins and minerals perform important functions in almost all bodily processes, but our bodies cannot manufacture them, so we must obtain them from food or supplements. According to health and nutrition surveys, 52% of adults take supplements. However, dietary supplements can interact with prescription medications. This article discusses common drug interactions with vitamins and minerals, along with suggestions on how pharmacists can manage these interactions. It is important for pharmacists to be able to identify the most vulnerable patients. Risk factors for poor drug-to-drug outcomes include multiple drug and/or dietary supplement use, older age, poor renal or hepatic function, and use of drugs with narrow therapeutic indices. Patients with these risk factors require special treatment to prevent drug interactions with vitamins and minerals.

When dealing with drug interactions with vitamin/mineral supplements, pharmacists consider several factors. First, need to determine need for dietary supplements while taking medication. If take the drug for a short period of time, can usually stop taking supplements until treatment is finished. Second, pharmacist should suggest alternatives. For example, if the interacting agent is an antacid that the patient requires to treat symptoms of gastroesophageal reflux disease, alternative medications such as proton pump inhibitors can be used during medication. If an affected drug must be taken chronically and replacement is considered necessary, pharmacists should work with patients and prescribing physicians to limit exposure to potentially dangerous drug interactions.

Vitamin A

Vitamin A is a fat-soluble vitamin found in everyday foods such as liver, yellow-orange fruits and vegetables (such as carrots), margarine, milk, and dark green leafy vegetables such as spinach. Not commonly available as a dietary supplement. However, it can be found as an ingredient in multivitamins and combination

supplements aimed at improving skin, hair and nails. Vitamin A plays an important role in vision, bone growth, cell differentiation and the immune system. Vitamin A deficiency often causes blurred vision. This is less common in the United States than in developing countries where diets are poor. Some conditions, such as celiac disease, Crohn's disease, and pancreatic disease, can lead to malabsorption of vitamin A from food. Interactions with vitamin A are a concern when using products classified as retinoids (compounds that are chemically similar to vitamin A). Retinoids such as isotretinoin (Accutane) and acitretin (Soriatan), respectively, are known to treat acne. Vitamin A toxicity is a concern when prescribing retinoid products. Pharmacists should remind patients taking retinoid products of the importance of avoiding excess vitamin A. Patients should also be educated about the signs and symptoms of vitamin A toxicity, such as nausea, vomiting, dizziness, blurred vision, and muscle incoordination.

Vitamin B6 (pyridoxine)

Vitamin B6 or pyridoxine is a water-soluble vitamin used to treat vitamin B6 deficiency and some forms of anemia. Foods high in pyridoxine include meat, whole grains, and certain fruits and vegetables. Pyridoxine has been shown to reduce the effects of phenytoin and levodopa. However, this effect was not observed when levodopa was prescribed in combination with carbidopa, preventing the interaction from occurring. In rare cases when patients are taking levodopa without carbidopa, pharmacists should advise patients to avoid products containing pyridoxine. B. Pyridoxine 10-25 mg may be sufficient to inhibit levodopa. Pharmacists should strongly recommend that patients switch to levodopa/carbidopa combination therapy if they are not already on levodopa/carbidopa combination therapy. There is limited evidence that high-dose pyridoxine lowers serum phenytoin concentrations, thereby reducing the efficacy of phenytoin.

Vitamin E

Vitamin E is a fat-soluble vitamin and is used for many ailments, including vitamin E deficiency, atherosclerosis, Alzheimer's

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disease, and several types of cancer. It is also a common supplement taken by patients suffering from cardiovascular disease. There is also a case report of an increased risk of bleeding in patients taking vitamin E and warfarin. This side effect is more likely with high doses of vitamin E (>800 IU) than with low doses of multivitamins. Therefore, pharmacists should advise patients taking warfarin to take a multivitamin as their daily source of vitamin E rather than a dietary supplement containing vitamin E only. There is controversy about vitamin E and other antioxidants associated with chemotherapy. A theoretical interaction has been proposed in which antioxidants

interfere with the oxidative mechanisms of chemotherapeutic agents, thereby reducing their effectiveness. The clinical implications of this interaction are still unknown. However, until more is clarified, it may be worth advising patients to avoid antioxidant supplements while receiving chemotherapy that relies on this mechanism. It is important to note that antioxidants may be used to prevent or reduce the toxic effects of Patients undergoing chemotherapy should be advised not to take nutritional supplements themselves and to inform their oncologist of all nutritional supplements and alternative therapies.