

Effects of Nutrient-Drug Interaction on Gastrointestinal System

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Abstract:

It is necessary to investigate the relationship between drugs and nutrients in two ways: the effects of pharmaceutical agents on nutrition and the effects of nutrients on drugs. Medicine is the most important treatment for diseases. However, the use of any drug carries with it a certain danger. Identification of toxicities and metabolism of drugs is important in the prevention and diagnosis of diseases. In this review we will discuss the effects of nutrient-drug interaction on the gastrointestinal system.

Key word: gastrointestinal tract; absorption of nutrients; absorption of drugs; food-drug interaction; toxicity

Introduction

Nutrients provide energy for the body and have physiologically beneficial effects. However, since foods have many functional groups, they can show negative effects as well as positive effects [1]. Drugs are required in metabolic processes in which cellular balance begins to deteriorate throughout life. However, the effects of drugs on the body can be changed by food [2]. Interactions between drugs and nutrients are likely to occur because drugs and nutrients share some properties such as causing toxicity at high doses, altering physiological processes, and being absorbed from similar sites in the gut [3]. The interaction is a result of clinical change in the pharmacokinetics and/or pharmacodynamics of the drug [4]. Pharmacokinetic mechanisms include specifically altered solubility, removal of drug from plasma protein binding sites, inhibition or induction of transport proteins and enzymes involved in drug transport and metabolism, respectively, and alteration of gastrointestinal or urinary pH [4].

Nutrient-drug interaction can cause chemical, physical, physiological, or pathophysiological reactions. Many studies have shown that nutrients affect the absorption, metabolism, and distribution of drugs [5]. In the intake of most of the drugs, the individual's hunger or satiety is related to the functionality of the treatment. While some substances in nutrients affect drug absorption, the presence of some nutrients in the digestive system also changes this absorption. The nutritional status of the individual is also affected by the drugs taken. In order to prevent this interaction, the ideal time for the use of drugs is recommended as 1 hour before or 2 hours after food intake [6,7]. Anesthesia drugs, pain relievers, antibiotics, antiretroviral drugs, antifungal drugs, anticholinergic drugs, antispasmodic drugs, antidiabetic drugs, antitumor drugs, antituberculosis

drugs, antihistamines, antihypertensives, asthma drugs, osteoporosis drugs, diuretics, triglyceride, and cholesterol-reducing drugs, heartburn and ulcer drugs, hormone drugs, laxatives, psychiatric disease drugs, hypnotic drugs, sedative drugs, anticonvulsant drugs, and Alzheimer's drugs may constitute nutrient-drug interaction [8].

The most important issue of vital importance for our body is the immune system. Weakening of the immune system can cause many diseases such as inflammatory diseases, psychosomatic diseases, metabolic, and cancer. In order to strengthen the immune system, necessary care and attention should be paid at every stage of life, starting from infancy and even in the womb. The immune system is weaker in the elderly and diseases settle very easily. Thus, care for the gastrointestinal system is important.

Immune system diseases contribute to abnormalities or infections. Gastrointestinal system diseases, which adversely affect the health of individuals and therefore their quality of life, have a high prevalence in society. Although functional digestive disorders are the most important gastrointestinal disorders, it is stated that approximately 50% of the patients who apply to the gastroenterology departments of health institutions with complaints of the digestive system have chronic gastrointestinal disorders. Complaints such as diarrhea, reflux, gastroenteritis, constipation, and bloating occur acutely due to many reasons such as nutrition and stress, as well as as a result of infections [9].

Conclusion:

Nutrient-drug interactions can cause decreasing in efficacy, increasing in toxicity, or a change in nutritional status. In particular, patients in the risk group (the elderly, those receiving treatment in the intensive care unit,

those receiving nutritional support, those using drugs with narrow therapeutic ranges, those with liver and/or kidney dysfunction, and those with malabsorption problems) should be closely monitored, the patient's drug therapy and nutritional status, symptoms and laboratory conditions. Findings should be evaluated and reviewed together.

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