Commentary

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An Overview of Nutrient Absorption

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Description

Ant nutrients are natural or synthetic compounds that interfere with the absorption of nutrients. [1] Nutritional studies focus on the anti-nutrients commonly found in foods and beverages. Anti-nutrients can manifest themselves in the form of overdose of drugs, chemicals naturally contained in food sources, proteins, or the nutrients themselves. Anti-nutrients work by binding to vitamins and minerals, blocking their absorption and blocking enzymes.

Preventing mineral intake

Phytic acid has a strong binding affinity with minerals such as calcium, magnesium, iron, copper and zinc. This causes precipitation and the intestinal inability to absorb minerals. Phytic acid is widely distributed in nuts, seeds and grain shells, and phosphates combined with mineral chelation are released into the environment, resulting in agriculture, animal nutrition and eutrophication. It is very important in eutrophication. There is no need to reduce phytate (including nutrients) by grinding, and the amount of phytic acid in animal feeds is usually reduced by adding histidine phosphate-type phytase.

Oxalic acid and oxalate are abundant in many plants, especially rhubarb, tea, spinach, parsley and purslane. Oxalate binds to calcium and prevents it from being absorbed by the human body. Glucosinolates are considered goiter because they prevent the absorption of iodine and impair the function of the thyroid gland. They are found in plants such as broccoli, Brussels sprouts, cabbage, mustard greens, radishes and cauliflower.

Enzyme inhibition

Protease inhibitors are substances that block the action of trypsin, pepsin, and other proteases in the intestine, preventing protein digestion and subsequent absorption. For example, Bowman-Birk trypsin inhibitors are found in soybeans. Some trypsin inhibitors and lectins are found in legumes and interfere with digestion [1].

Lipase inhibitors interfere with enzymes such as human pancreatic lipase that catalyze the hydrolysis of some lipids, including fat [2]. For example, the anti-obesity drug orlistat allows certain percentages of fat to pass through the digestive tract without being digested.

Amylase inhibitors prevent the action of enzymes that break glycosidic bonds in starch and other complex carbohydrates, preventing monosaccharides from being released and absorbed by the body. Like lipase inhibitors, they have been used as diet aids and to treat obesity. They are found in many types of beans. Over-the-counter amylase inhibitors are extracted from navy beans. Excessive intake of the required nutrients can also have antinutrient-like effects. Excessive intake of dietary fibers can pass the intestinal tract to such an extent that other nutrients cannot be absorbed. However, this effect is not actually seen, and the reduction of the absorbed mineral may mainly cause phytic acid in fibrous food. The expensive food simultaneously with iron containing iron can remove the absorption of iron *via* the iron transport protein HDMT1 and to inhibit calcium [3].

Avidin is an anti-laminated form found in the active form in raw protein. It binds to viotin (vitamin B7) and is very close to animals and may occur in B7 animals and in extreme cases of humans. Flavonoid is a group of polyphenol compounds that are widely used, and flavonoids containing tannin. These compounds are chelating metals such as iron and zinc, and absorption of these nutrients can also be reduced and they can also inhibit digestive enzymes and also cause proteins [4].

Plant saponins can trade like a step-down child and can be classified as anti-initiators. Antiblims can be found at a level of almost all food for various reasons. However, as a result of marine processes, their levels decrease with modern harvest. Currently, this possibility is to completely eliminate the anti-continuous pedestal of genetic engineering. Such genetic modifications can make food more nutritious, as these compounds have beneficial effects, so they could make food more nutritive, but do not improve people's health [5].

Many traditional food preparation methods such as germination, fermentation, boiling and malting increase the nutritional value of plant-based foods by reducing certain anti nutrients such as phytic acid, polyphenols and oxalic acid. Such processing methods are becoming widespread in societies where grains and legumes make up the majority of the diet. An important example of such a process is fermenting cassava to produce cassava flour. This fermentation reduces the levels of

toxins and anti-nutrients in the tubers. Nutrient cycle (or ecological recycling) is the transfer and exchange of minerals and organic matter back into the production of matter. The flow of energy is unidirectional and aperiodic, but the movement of mineral nutrients is periodic. Mineral cycles include, but are not limited to, the carbon cycle, sulphur cycle, nitrogen cycle, water cycle, phosphorus cycle, and oxygen cycle. These along with other mineral nutrients, are continuously recycled into productive ecological nutrients. Nutrient cycle is a natural recycling system. All forms of recycling have a feedback loop that consumes energy and reuses material resources. Recycling in ecology is highly regulated in the process of decomposition. Ecosystems utilize biodiversity in food webs that recycle natural materials such as mineral nutrients, including water. Recycling in the natural system is one of many ecosystem services that maintain and contribute to the well-being of human society [6].

There is a lot of overlap between the terms biogeochemical cycle and nutrient cycle. Most textbooks integrate the two and seem to treat them as synonyms. [5] However, in many cases, these terms appear independently of each other. Nutrient cycle is more commonly used with direct reference to the concept of systemic circulation, in which the ecosystem functions as a unit. From a practical point of view, it makes no sense to judge the ecosystem on earth by looking at the entire column of air above it and the depth of the Earth below it. Ecosystems often do not have clear boundaries, but as a practical model, it is useful to consider a functional community where most mass and energy transfers occur. The nutrient cycle occurs in ecosystems involved in the larger biogeochemical cycle of the earth through a system of inputs and outputs.

Malabsorption is a condition that results from abnormal absorption of food nutrients through the Gastro Intestinal (GI) tract. The disorder can be a single or multiple nutrients, depending on the anomaly. This can lead to malnutrition and various anemia's [7].

Normally, the human gastrointestinal tract digests and absorbs food nutrients with amazing efficiency. The typical Western diet that an adult consumes daily is about 100 g of fat, 400 g of carbohydrates, 100 g of protein, 2 L of liquid, and the necessary sodium, potassium, chloride, calcium, vitamins, and other elements. Saliva, stomach, intestine, liver, and pancreatic secretions add an additional 7-8 L of fluid containing protein, lipids, and electrolytes to the intestinal contents. If one of the many steps in the complex process of nutrient digestion and absorption is compromised, intestinal malabsorption can occur. Selective malabsorption of only a single nutrient occurs when the abnormality affects a single step of the absorption process, such as primary lactase deficiency, or when the disease process is confined to the very proximal small intestine. There is a possibility. However, when the disease process is widespread, the general malabsorption of multiple dietary nutrients occurs and multiple digestive and absorptive processes are interrupted, as is the case with celiac disease, which involves the small intestine extensively [8].

Depending on the nature and extent of the disease process that causes malabsorption, gastrointestinal symptoms may be severe, subtle, or even absent. Diarrhea, weight loss, gas, bloating, abdominal cramps, and pain may be present. Diarrhea is a common complaint, but the type and frequency of stools varies significantly, from more than 10 watery stools per day to less than one bulky putty-like stool, in the latter case of some patients. Complains of constipation on the other hand, in patients with steatorrhea and systemic malabsorption, the volume of stool is always which is higher than usual. Not only do unabsorbed nutrients contribute to the bulkiness of the stool, but in conditions associated with mucosal inflammation, mucosal fluid and electrolyte secretion also increases. B. Celiac disease has increased. In addition, non-absorbed fatty acids, which are converted to hydroxy fatty acids by the phytophaulous colon, and non-absorbed bile acids impair absorption by the colon, induce the secretion of water and electrolytes, and contribute to stool bulk. Weight loss is common in patients with marked intestinal malabsorption, but should be assessed in relation to caloric intake. Some patients make up for the waste of unabsorbed nutrient feces by significantly increasing their oral intake [9]. Therefore, it is very important to have a careful nutritional history of patients with suspected malabsorption. Excessive flatulence and abdominal distension may indicate excessive gas production due to fermentation of unabsorbed carbohydrates, especially in patients with primary or secondary disaccharides deficiency, such as: B. Lactose intolerance or sucrose intolerance. Malabsorption of food nutrients and excessive fluid secretion by the inflamed small intestine also contribute to bloating and bloating. The prevalence, severity, and characteristics of abdominal pain vary significantly among the various disease processes associated with intestinal malabsorption. For example, pain is common in patients with chronic pancreatitis or pancreatic cancer and Crohn's disease, but not in many patients with celiac disease or malabsorption after gastric resection [10].

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