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Less digestible food ingredients are beneficial to the intestines!

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Dietary fiber is effective for bowel movement

Dietary fiber is not degraded by human digestive enzymes. There are two major types: water-soluble and water-insoluble dietary fiber. Water-soluble dietary fiber, as it is named, increases its viscosity when it dissolves in water and its texture becomes sticky. On the other hand, water-insoluble dietary fiber does not dissolve in water. It contains water and can expand from several to several tens of times. Dietary fiber is often said that it does not become nutritious. However, it can be helpful for the prevention and improvement of diseases. Do you know why? The most commonly known reason is that it helps the bowel movement, especially insoluble dietary fiber. It absorbs moisture and increases the amount of feces which will urge to move bowels and irregularity can be improved. The effect of dietary fiber is not limited to this. We will introduce other functions of dietary fiber in the following paragraphs.

The ingestion of water-soluble dietary fiber moderates the speed of the digestion and absorption of carbohydrates contained in meals. Therefore, the elevation of postprandial glucose level and the secretion of insulin can be suppressed. These effects are useful for the prevention and treatment of diabetes. Since we need to chew a lot to eat dietary fiber, the secretion of saliva increases and it makes us to easily obtain a sense of satiation which in turn prevents overeating. Dietary fiber also delays the absorption of lipids. Many clinical trials for humans have shown that the intake of dietary fiber can decrease the level of serum cholesterol.

Dietary fiber reduces toxins in intestines thus bringing positive effects on beauty care

The improvement of bowel movement can prevent intestinal diseases and eliminate toxins from the body. When the amount of feces increases due to the intake of water-insoluble dietary fiber, the feces will be able to pass through the intestines quickly and the pressure

inside the large intestine can be lowered. This can prevent colon diverticulosis. Since dietary fiber absorbs toxins and eliminates them from the intestines, it can lower the risks of developing colorectal cancer. The toxins, which are made in the intestines and are absorbed by the body, may cause diseases in the liver, so it is important to take dietary fiber that can carry the toxins out of the intestines. In addition, the toxins may reach to the skin through the bloodstream and adversely affect our beauty. The ingestion of dietary fiber can be beneficial to alleviate these symptoms.

Some readers may think that dietary fiber absorbs minerals, which are important to our bodies, and carries them out of the intestines as well as toxins. This only applies when we ingest an excessive amount of dietary fiber. When we take it within the recommended intake range, it actually enhances the absorption of minerals. Moreover, when intestinal bacteria take dietary fiber, they produce acidic substances which will lower the pH level in our intestines. Once the pH level in the intestines goes down, minerals tend to be dissolved easily which increase their absorption rate into the body.

Pay attention to "short chain fatty acids" which are produced from dietary fiber by intestinal bacteria!

Once intestinal bacteria take dietary fiber, they exert various useful effects. Food ingredients like dietary fiber that feed good bacteria in the intestines are called "prebiotics". When good bacteria take water-soluble dietary fiber, they produce short-chain fatty acids such as acetate, propionate and butyrate. Oligosaccharides are also a type of prebiotics that increases bifidobacteria.

In recent years, many research data has been published and suggested that this short chain fatty acids improve the conditions of the intestines which has drawn a great attention from researchers of intestinal bacteria. According to these publications, short-chain fatty acids are expected to be effective for intestinal and general health from the standpoint of the proliferation of enterocytic cells, the enhancement of the absorption of minerals, the improvement of lipid metabolism in the liver, the promotion of bowel peristalsis, and controlling obesity. Dietary fiber brings great benefits to our health by working directly in the intestines and indirectly through the intestinal bacteria.

Lately, the idea that people can lose weight by avoiding to take carbohydrates has become popular and diet programs which restrict the ingestion of carbohydrates are growing. An excess intake of carbohydrates can certainly cause obesity. However, do you know that

carbohydrates are very important for intestinal health? Actually, the ingredients that intestinal bacteria break down in the intestine are not only dietary fiber and oligosaccharides. The components which not only have a prebiotic effect like dietary fiber and oligosaccharides, but also are not degraded by human digestive enzymes are collectively called “luminacoid”.

There are components among luminacoids that can feed larger numbers of intestinal bacteria compared to dietary fiber. This is called “resistant starch”. Starch is normally decomposed into glucose by digestive enzymes and used as sugar after it is absorbed in the body. However, hardly digested resistant starch is a kind of starch and can feed intestinal bacteria producing many useful ingredients in the intestine such as short chain fatty acids. Resistant starch is abundant in whole grains, pasta, green bananas and cold potatoes. Other than these foods, resistant starch is produced once heated starch cooled down because its structure changes after cooling down. Cold rice balls and potato salad are representative food with this structure change. Based on the above explanations, do you understand now why excessive restrictions on carbohydrates would adversely affect intestinal bacteria?

Besides resistant starch, the proteins hardly digested are called resistant proteins and also classified into luminacoids. Resistant proteins are found in Soba (buckwheat) and Sake kasu (the lees left over from the production of Japanese sake).

A lesser volume intake of dietary fiber is related to a lesser ingestion of fiber in cereals. Comparing the amount of dietary fiber per 100 g, mushrooms, seaweed and vegetables contain more fiber than cereals, but it is not easy to eat large quantities of mushrooms, seaweed and vegetables at once. When we want to increase the volume intake of dietary fiber, it is important to raise the intake of grain with vegetables. We can take dietary fiber efficiently by eating brown rice, mixing barley with rice, and choosing rye bread or whole grain bread. A little ingenuity of adding dietary fiber and luminacoids to our diets can enhance our health that starts from the intestines.