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Take lactic acid bacteria to cope with allergy

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Take measures against allergic reactions with lactic acid bacteria

Allergic diseases mean that immunity reacts excessively to external foreign matters (pollen, dust, mites, etc.). Th2 cells are typical immune cells which react excessively to foreign bodies.

Commonly, Th2 cells dominate the immune response of new-born infants. Then, Th1 cells that inhibit Th2 cells start functioning after the infants touch various microorganisms and foreign substances in accordance with their subsequent growth stage. However, in recent years, opportunities to contact various microorganisms have been decreasing due to the improvement in environmental hygiene, an exaggerated attention to hygiene, and the reduction of risks to develop infectious diseases. As a result, Th2 cells are not suppressed and the risk of developing allergy has been kept high.

Take probiotics instead of contacting microorganisms

In order to improve the current situation where Th2 cells are continuously exaggerated, it is important to bring children outdoors and let them play in the nature. Many microorganisms live in the soil, river, forest, and ocean, and the children who play in these environments can obtain strong bodies. However, in modern society, just because the risk of infectious diseases is lower than before, we cannot say something like “is OK to expose your children to microorganisms” because microorganisms could also possibly cause infectious diseases. Therefore, probiotics (lactic acid bacteria), has attracted people’s attention as a safe stimulus to promote the development of Th1 cells instead of infectious microorganisms.

Probiotics are “microorganisms that provide benefits to us when they are ingested alive.” Many people often understand probiotics as equal to lactic acid bacteria, but this is not really an accurate understanding. When we look at probiotics from the standpoint of being beneficial to us, we should be aware that acetic bacteria, butyrate-producing bacteria,

bacillus subtilis var natto, yeast, etc. are also included in probiotics in addition to lactic acid bacteria and bifidobacteria. Since representative probiotics are lactic acid bacteria, we will establish the idea of "probiotic = lactic acid bacteria" for the purpose of explanations in this newsletter.

In the current age, clinical trials are being conducted worldwide to use probiotics for the prevention and treatment of allergies. We would like to introduce here the contents of these trials.

Clinical trials about the relationships between probiotics and allergy risks

- **The condition of intestinal microbiota of the patients with atopic dermatitis**

Research studies have reported that patients with atopic dermatitis have unbalanced intestinal microbiota. The studies done up until now have shown that patients with atopic dermatitis have a lesser amount of *Bifidobacterium* in their intestines. The studies conducted in Sweden and Lithuania have also showed that the population of *Lactobacillus*, *Bifidobacterium*, or *Bacteroides* in the intestines of children with allergies is small by the age of 2 years old.

- **The relationship between the administration of lactic acid bacteria to pregnant women and the risk of developing allergy in childhood**

An experiment was conducted among 159 pregnant women who belong to family members with a history of developing atopic dermatitis. They took *Lactobacillus rhamnosus* (lactic acid bacteria) from before childbirth through the duration of breast-feeding period, and even infants took *Lactobacillus rhamnosus*. The researchers checked the conditions of the subject children when they were 2 years old, the incidence of atopic dermatitis decreased by half compared to the children in the placebo group. In addition, follow-up experiments were conducted when those children became 4 and 7 years old, and the continuous suppressing effect against the onset of allergy which resulted from the ingestion of lactic acid bacteria has been recognized. The research paper based on these results was published with the conclusion that lactic acid bacteria is effective as early prevention for infants at high risk of developing atopic dermatitis.

- **Effect of probiotics to nasal allergy**

A study with 22 patients who suffer from cedar pollen allergy has shown that their allergic symptoms were significantly improved since they ingested *Enterococcus faecalis* (lactic acid bacteria) compared to the other patients who ingested only placebo. Other studies have reported that symptoms of patients who have allergy to cedar pollen were reduced after

eating foods containing *Lactobacillus acidophilus* (lactic acid bacteria). In addition, other researches have shown that allergic reactions in eyes and the nose during the pollen dispersal season were improved by the administration of bifidobacteria.

The Improvement of intestinal microbiota is important after we become adults

In addition to the introduced clinical cases, many other clinical trials on allergies using lactic acid bacteria have been published all over the world. However, we should be aware that many of those clinical trials are specialized in infants.

Babies are under a germ-free condition in the mother's womb. After they are born, patterns of intestinal bacteria are established while they are contacting various microorganisms through everyday life. When they become an adult, 1000 kinds of 1000 trillion microorganisms reside in their intestines. The reason about why the studies concerning the reduction of the risk of developing allergy with the administration of lactic acid bacteria are frequently conducted in the infancy period is because these studies aim to reach the goal of enhancing immunity with the stimulation from lactic acid bacteria while the bacterial patterns in their intestines are still immature. Once we become adults, the patterns of intestinal bacteria are established, and the ingested lactic acid bacteria will be recognized by the body as foreign matter which will be eliminated from it. Therefore, ingested lactic acid bacteria may not be able to fully demonstrate its benefits after we become adults.

It is certainly important to take probiotics after we became adults as well. Researches have revealed that even though those ingested probiotics cannot settle in the intestines, the cells of lactic acid bacterial can activate our immune cells. Therefore, regular consumption of lactic acid bacteria can be effective to avoid the risk of developing allergies. For this purpose, there is no big difference in the efficiency of the bacteria regardless of whether is alive or dead. Since the cellular components of lactic acid bacteria are beneficial, the life or death of the bacteria does not provide a different impact to us.

Also, since the necessary nutrients for 1000 kinds of bacteria residing in the intestines are different, it is important to have a balanced diet in order to maintain the intestinal bacteria in a good balance. Moreover, it is necessary to willingly take oligosaccharides and dietary fiber that are classified into prebiotics. Fermented vegetable foods also serve as nutrients for lactic acid bacteria and bifidobacteria in the body, which will be able to balance the intestinal bacteria.