

**Important in Flu Season! Autonomic Nervous System and Immunity
~Nose • Throat health indications from mucous membranes~
AHCC® ENT symptom amelioration findings presented at
ESPEN congress**

At Amino Up Chemical Co., Ltd. (Sapporo City, Japan. P resident – Hajime Fujii) whilst we manufacture functional ingredients, we have also been supporting research into the relationships between functional foods and health maintenance, health improvement, and disease prevention for many years. In this news letter, we shall cover health information hot topics, and also introduce some of the latest research results and related evidence behind some of our products

‘Homeostasis’ - the cornerstone of biological systems

We’re in flu season. This year, we have been heard talk of flu vaccine shortages, and we’d all like to take extra care of our health. While immunity is the most important tool our bodies have to protect us from influenza, in truth, it does not fight alone. In our bodies, the ‘autonomic nervous system’ and ‘neuroendocrine system’ also work with the immune system to protect us. The process that keeps these systems working together in harmony is called ‘Homeostasis’.

However, should the body be exposed to environmental or temperature changes, homeostasis can cause irregularities. For example, ‘autonomic nervous system dysfunction’ can influence the functioning of the mucous membranes in the nose and throat, and should the working of the immune system be disrupted it also becomes easier for viruses such as influenza to successfully infect us.

There is a wealth of research data regarding the functional food ingredient AHCC® and its modulatory functions upon the autonomic nervous system and the immune system. Out of many pieces of research, this newsletter shall focus on and introduce a particular report given at the European Society for Clinical Nutrition and Metabolism (ESPEN) this year. The 2017 congress was held from September 9th to September 12th at the Hague, Netherlands.

2017 Meeting of ESPEN, Research Summary

■Research Title Efficacy of AHCC® against nasopharyngeal complaints: a randomized, double-blind, placebo-controlled trial.

■Authors T. Hisajima, H. Waki (Teikyo Heisei University), A. Sato, T. Miura (Amino Up Chemical Co., Ltd.) et. al.

■Research Methods 23 adult participants who matched more than one field in the ‘Comprehensive Health Check for Workers’ (ages ranging from 20 to 24). AHCC® (3 g/day) or placebo was scheduled, each for 14 days, with a 14-day washout.

■ **Results** AHCC intake® was shown to improve nasopharyngeal symptoms (Fig. 1). Furthermore, since a suppressive effect was observed in the high-frequency components of heart rate variability - used as a marker for the parasympathetic nervous system, it was hypothesized that the mechanism behind improvement in nasal symptoms may involve changes in the autonomic nervous system. In addition, an increase was observed in levels of the mucosal immunity marker 'secretory immunoglobulin A' (sIgA), found in saliva. This indicates that AHCC® may possibly also play a role on the functioning of the immune system.

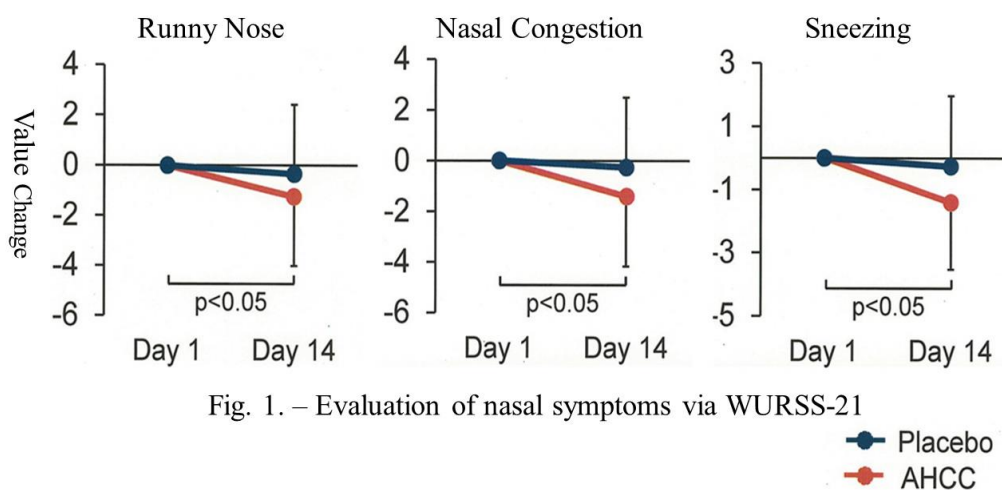


Fig. 1. – Evaluation of nasal symptoms via WURSS-21

【Comment from Dr. Tatsuya Hisajima, Faculty of Health Care, Teikyo Heisei University】

〈Background Behind Research〉

Within the field of 'Kanpo'- traditional Japanese medicine, there is a state called 'Mibyō'. This refers to the state where the body is just one step away from illness. Specifically, this can refer to reduced circulation to the extremities, a runny or blocked nose, a sore throat, tired eyes, ringing ears, headaches, and so on. These can all point to an unbalanced physical or mental state. While conventional medicine has begun to turn its attention towards preventive medicine in recent years, Kanpo has always aimed to improve lifestyle factors through treatment with acupuncture or traditional medicine and dietary instruction, and thus direct the body and mind away from illness. My life has been dedicated to the improvement of the mibyō state through Kanpo approaches. This research presentation is just one part of years-long research into Kanpo.

〈Reason for focusing on Nasal Symptoms〉

Contemporary people often make no distinction between day and night, with this lifestyle leading to disruption in circadian rhythms (system which controls body temperature and blood pressure over a 24-hour period), and unbalancing the autonomic nervous system. Should the sympathetic nervous system be weakened during the day, one can also become less able to resist stress. The severe fluctuations in temperature that are characteristic of this season lead to sneezing, runny nose, congestion, and other nasal symptoms, which in truth are strongly connected to the functioning of the autonomic nervous system. Through stress tests such as placing the feet in 13°C cold water for a set period, the sympathetic nervous system can be seen to activate to resist this stress in healthy individuals. However, in those whose autonomic nervous system function is unbalanced, this response from the sympathetic nervous system is seen to be weaker. This leads to worsening of nasal symptoms. ※1

When activity of the parasympathetic nervous system is increased, blood vessels in the nasal mucosa enlarge, which leads to increased secretion of nasal mucus. Because of this, nasal symptoms can be taken as a sign of unbalance in the autonomic nervous system (particularly daytime decreases in the activity of the sympathetic nervous system).

The effect of cold on worsening these symptoms of mibyō state may also be the reason cold is said to be the cause of all kinds of ills. In addition, autonomic nerves also modulate

immune function. Sympathetic nerve activity guides immune cells, and serves to defend against pathogens, as had been understood in recent years.

〈Healthcare for Mibyou ?〉

If you feel that your body might be in a state of “Mibyou”, it is important not to just watch and wait, but rather to make changes to one’s lifestyle. In Kanpo, this concept is called “Yohjoh”, and refers to looking after one’s health. The body clock is an important system that has various effects upon many biological functions, such as that autonomic nervous system, endocrine system, body temperature, and sleep and waking. This body clock system focuses on the suprachiasmatic nucleus in the brain, marks out the 24-hour circadian rhythm, and governs the rhythm of the entire body. It is said that modern people have a tendency to place too great a burden upon their body clocks, and often end up unbalancing their circadian rhythms. By ensuring that one always goes to bed and gets up at the same time and keeps regular meals, in addition to working during daytime when the sympathetic nervous system is active and resting properly at night, it is possible to balance the circadian rhythm, and work to improve mibyou. Since AHCC can be believed to modulate the function of the sympathetic nervous system, it can be thought to be beneficial to busy people who are attempting to balance their lifestyle, and also to assist in the normal function of various mucous membranes.

※1 Akiyoshi Konno (2015)「鼻過敏症における鼻過敏症状発現の神経機序」日鼻誌,54(1) (Japanese)

■AHCC®

AHCC® is extracted from cultured *Lentinula edodes* mycelia. It was developed in 1989, and has been the subject of extensive research at universities and medical facilities worldwide. It is rich in α -glucans, and has been widely used as a supplement for immune modulation. It is marketed not only within Japan, but also in Europe, America, Asia, and Oceania. It currently sees use within the field of integrative medicine.

■Amino Up Chemical Co., Ltd.

The company was founded in 1984, and it states its mission as to ‘bring smiles to the people of the world with the blessings of nature’. The company develops and produces supplements and functional foods, and maintains a strong focus on gathering powerful and trustworthy scientific evidence for all of its products. In September of 2011, the factory and main office building underwent reconstruction, and the building called ‘eco house’ in which the offices are located utilizes over 70 technologies aimed at reducing CO2 emissions and its effect on the environment. For example, Solar energy generation, Geothermal heat pumps, and a cooling system using snow collected in winter are just a few of the technologies introduced, and the company achieved a 50% reduction in the amount of CO2 it produces.



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President: Hajime Fujii

Capital: 369 million yen

Company activities:

- Biotechnology (cultures produced in large tanks), manufacture of basidiomycete -derived botanical and biological ingredients.
- The development, manufacture, and sales of naturally -derived physiologically active ingredients.
- Test-manufacture runs of physiologically active substances using large tank cultures.
- The production of naturally -derived agricultural products, food additives, health foods, and medicinal ingredients.

• ISO-9001:2015 certified • ISO 22000:2005 • Certified GMP for manufacture of dietary supplements.

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