

Chlorella Gains Popularity as Functional Food International Symposium on Benefits, Potential of Chlorella Held in Seoul

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Riding on the well-being wave, a recent health trend in which people place their top priority on achieving a state of being happy, healthy and prosperous regardless of their level of income, chlorella is gaining tremendous popularity as a functional food in South Korea.

In a bid to promote research findings on additional benefits of chlorella, the Korean Society of Food Science and Technology (KOSFOST) organized an international symposium at the Convention and Exhibition Center (COEX) in southern Seoul yesterday.

The fourth International Chlorella Symposium, supported by the Korea Health Industry Development Institute (KHIDI) and sponsored by Daesang Co., one of Korea's leading foodstuff companies, was held under the theme of "Functionality of Chlorella and its Industrial Applications."

"The KOSFOST organized the International Chlorella Symposium in a bid to further promote the health benefits of Chlorella and to seek more diverse ways to commercialize Chlorella," said Lee Young-choon, president of KOSFOST at the symposium.

Renowned biomedical and biochemical scholars and researchers from Japan, Hong Kong and South Korea presented their latest discoveries on Chlorella, and Japanese and Korean food vendors presented a vision for Chlorella as a future dietary supplement product.

What is Chlorella?

Chlorella is a type of single-celled green algae that is the highest source of chlorophyll compared to any other existing plant species in the globe. The particular fresh-water microscopic plant, about 2-10-microns in diameter, contains a host of health building nutrients.

Chlorella was first identified by a Dutch scientist in 1890, but it was not until the 1950s that Japanese studies threw light on its enormous potential. Researchers discovered that some of the beneficial health effects of chlorella appeared to stem from its high concentration of chlorophyll and beta-carotene, as well as from its unusual cell wall.

It is the highest source of chlorophyll of any other existing plant species in the globe. Chlorophyll is a liver detoxifier, a bowel cleanser, and a catalyst for the absorption of other elements, including iron. In addition to chlorophyll, it contains more than 20 vitamins and minerals, dietary fiber, nucleic acids, some 20 types of amino acids, enzymes, protein, chlorella growth factor (CGF) and other substances. The CGF is also

known as *Chlorella vulgaris* extract (CVE)

It not only improves the metabolism of the human body and is highly effective in curing constipation, but it is also effective in detoxifying heavy metals and other synthetics from the body, since the typical cell wall of the green alga enable it to effectively bind with metallic toxins such as mercury, cadmium and lead, and either neutralize or eliminate those poisonous substances from the bloodstream. The fibrous materials in chlorella are proven to improve digestion and promote the growth of beneficial aerobic bacteria in the stomach.

Another fascinating aspect of chlorella is that it aids the body in strengthening the immune system. The CGF strengthens immunity by improving the activity of certain cells that defend against viruses. The CGF strengthens immunity by improving the activity of macrophages, which are also known to stifle cancer cells.

Chlorella stimulates the healing process of damaged tissues in mature animals and humans. Biochemists have proven that *Chlorella* actually increases both bone mineral density and the rate of bone formation thus is a promising new anabolic treatment for osteoporosis. It is also effective in reducing high blood pressure, in controlling blood sugar levels, and in lowering serum cholesterol levels.

It also helps to alkalinize the human body. Such functions are important because all diseases start and thrive in an acidic environment. The body of people nowadays are highly acidic because of poor dietary habits; eating too much meat, junk food, fast food, processed foods and drinking soft drinks that are several thousand times more acidic than our bodies.

New Discoveries

At the International *Chlorella* Symposium, Professor Feng Chen of the University of Hong Kong said chlorella has an enormous potential as a raw substance for both pharmaceutical and biotechnology industries.

Chen said thanks to a number of important characteristics of chlorella, such as its much faster growth rate compared to other types of microalgae and its typical cell structure that can be easily manipulated through genetic engineering technologies, pharmaceutical and biotechnology corporations will be able to develop a cost-effective biotechnological process to extract substances, such as carotinoids and lutein, from the green algae.

Prof. Kim Young-ho of Inje University, South Kyongsang Province confirmed that his research reconfirmed that chlorella has been proven to aid the human body in restoring health, improving metabolism, balancing nutrients, detoxifying poisonous materials in the body and preventing osteoporosis.

However, he said those benefits will not take direct effect on certain diseases or ailments and will only have indirect supplementary effect. Kim added that the benefits of chlorella would vary according to each person's individual physical predisposition.

Industrial Potential

Prof. In Man-jin of Chungwoon University of Korea, said by adding chlorella or CGF to foodstuffs, food manufacturers can significantly extend the shelf life of fermented food products without antiseptics. He said Korean manufacturers are adding chlorella to fermented food products such as kimchi, tofu, yogurt and bread as well as fermented drinks and are filing for patents.

If chlorella extract is added to the dough before yeast fermentation, the visual appearance and flavor of the loaf is enhanced while keeping the bread fresher for a longer period. Chlorella can also be added to wine, cakes, cookies, cheese, ice cream, mayonnaise, pasta and rice to enhance flavor and nutritive value.

Daesang, Korea's largest chlorella vendor, expects to chalk up 75 billion won in sales from its tablet-form chlorella product this year, nearly double the sales figure of 2003, despite the protracted economic slump in Korea that has frozen consumer sentiment. Daesang's product has also been chosen as a World-Class Korean Product by the Ministry of Commerce, Industry and Energy.

Naoto Mine, a research fellow with San-Wa Co., Ltd, a Japanese food company, said that the Japanese health food market, or dietary supplement market, has grown to roughly 1.1 trillion yen this year, twice the size a decade ago.

He said chlorella accounts for 400 million yen of the Japanese health food market, the fifth largest as a single functional food item after popular items such as green tea.

In Japan, where chlorella is consumed by an estimated 7 million people daily, it is referred to as a functional food, a category which distinguishes chlorella as being of proven scientific benefit to the diet. It is not a health food supplement.

He suggested that considering the size of the gigantic Japanese chlorella market, which is expected to consume some 2,000 metric tons this year, much more than 100 metric tons consumed by the United States and some European countries, the Korean market still has high growth potential.

The KOSFOST organized the first International Chlorella Symposium back in 1999 to promote physiological benefits of chlorella and accurately inform about its effectiveness.