

Sharp's High-Density Plasmacluster Ions*¹ Proven Effective on Human Skin in Controlling *Staphylococcus Aureus², a Cause of Rough Skin, and in Curbing Excess Sebum, a Cause of Undesirable Oily Surface Shine on the Skin**

Through testing commissioned to Soiken Inc.*³, Sharp Corporation has proven on human skin that high-density Plasmacluster Ions (approximately 100,000 ions/cm³) are effective in controlling the growth of *Staphylococcus aureus*, a bacteria that causes rough skin*⁴.

In addition, Sharp has confirmed that the "water molecule coating" function*⁵ of high-density Plasmacluster Ions is effective in curbing excess sebum on the skin*⁴.

Through testing also conducted by Soiken Inc., Sharp has previously proven three skin beautification effects: better moisture retention*⁶, improved skin elasticity*⁵, and improved skin texture*⁵. These two new proven effects will further heighten Plasmacluster's value in providing skin beautification effects.

Details of these proven effects will be announced at the 28th Meeting of the Japanese Society of Aesthetic Dermatology to be held on August 7, 2010.

Based on the results of "academic marketing", a collaborative research approach to product marketing*⁷, Sharp has proven that Plasmacluster technology is effective against 28 kinds of harmful substances, including new strains of influenza*⁸, since this technology was first introduced in 2000. Research has also confirmed its safety*⁹. In 2004, working with an academic research organization*¹⁰, the mechanism for inhibiting the activity of bacteria was explained.

Sharp will continue to push the evolution of Plasmacluster technology forward and work to further validate its effectiveness with the aim of creating a healthy living environment.

*1 Plasmacluster Ion and Plasmacluster are trademarks of Sharp Corporation.

*2 Bacteria that cause inflammation of the skin.

*3 Soiken Inc. conducts clinical trials on a contract basis for the development of pharmaceuticals and foods.

*4 Effect will vary depending on the individual.

*5 Announced on June 4, 2010.

*6 Announced on February 17, 2010.

*7 A marketing method that obtains scientific proof of the effectiveness of a certain technology through collaborative research with leading academic institutions and develops consumer products based on this proof.

*8 H1N1 influenza virus, a new strain of virus that caused a global pandemic after the first outbreaks were confirmed in Mexico and the US in 2009.

*9 Testing conducted by Mitsubishi Chemical Medience Corporation, including tests for inhalation toxicity and for skin and eye irritancy and corrosivity.

*10 Joint research with Professor Gerhard Artmann, Aachen University of Applied Sciences, Germany.

Methodology to Test the Effectiveness of High-Density Plasmacluster Ions in Controlling Skin-Adherent Bacteria and Curbing Excess Sebum

Bacteria adhering to the cheek area of the face (*Staphylococcus aureus* and *Staphylococcus epidermidis*) were sampled under two conditions: when Plasmacluster Ions (at an ion density of approximately 100,000 ions/cm³) were generated and when no ions were generated. Changes in the bacteria counts over time were measured, as well as the percent change in skin sebum levels (amount of oil on the skin).

A Plasmacluster Ion generator was set up at a distance of 50 cm in front of the subject in a testing room having a floor area of 9.8 m² and adjusted to a temperature of 26° to 28°C and a relative humidity of 40% to 60%. The test subjects were 15 healthy females ranging from 30 to 65 years of age who performed light tasks using a computer during the test. This was a double-blind*¹¹ test in which neither the subjects nor the test administrators knew whether Plasmacluster Ions were being generated or not.

*11 A technique used in medical clinical trials. An objective test methodology designed to eliminate any subjective bias on the part of the test subject or the test administrator.

• Effect in Controlling *Staphylococcus aureus* Bacteria on the Skin

Staphylococcus aureus is well known as a harmful bacteria that causes rough skin. It is also said to be related to skin disorders such as atopic dermatitis, rashes, and impetigo*¹².

With ions present, the bacteria count decreased with the passage of time compared to when no ions were present, and a statistically significant difference was confirmed after four hours. As a result, it was confirmed that High Density Plasmacluster Ions are effective in controlling *Staphylococcus aureus* bacteria on the skin.

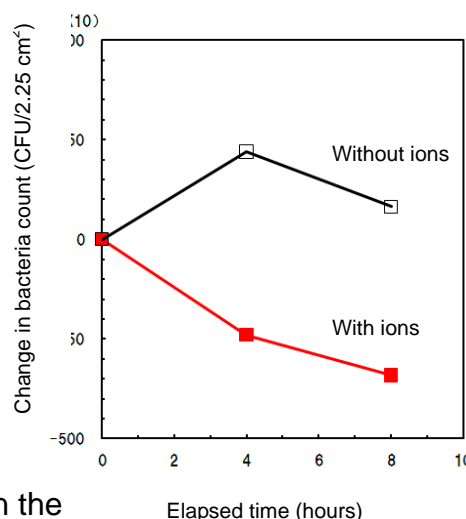


Figure 1: Change in the number of *Staphylococcus aureus* bacteria on the skin

*12 See *Biyo no igaku — Biyo hifu kagaku jiten* (“Cosmetic Medicine — Dictionary of Cosmetic Dermatology”), edited by Yasuo Asada, published by Chuo Shoin; and *Jintai jozai-kin no hanashi* (“A Discussion of Human Indigenous Bacteria”), by Akira Aoki, published by Shueisha.

It should also be noted that *Staphylococcus epidermidis* is said to be a “good bacteria” that plays a role in protecting the skin and preventing pathogens from invading the body*¹³. No statistically significant difference in changes in the bacteria count of this microorganism was observed, with or without the presence of Plasmacluster Ions.

*13 See *Jintai jozai-kin no hanashi* (“A Discussion of Human Indigenous Bacteria”), by Akira Aoki, published by Shueisha.

• Effect in Curbing Excess Sebum

It was confirmed that the presence of Plasmacluster Ions curbed increases in the amount of sebum on the skin after eight hours compared to when no ions were present. As a result, the effectiveness of the water molecule coating function of Plasmacluster Ions in curbing excess sebum, a cause of undesirable oily surface shine on the skin, was confirmed.

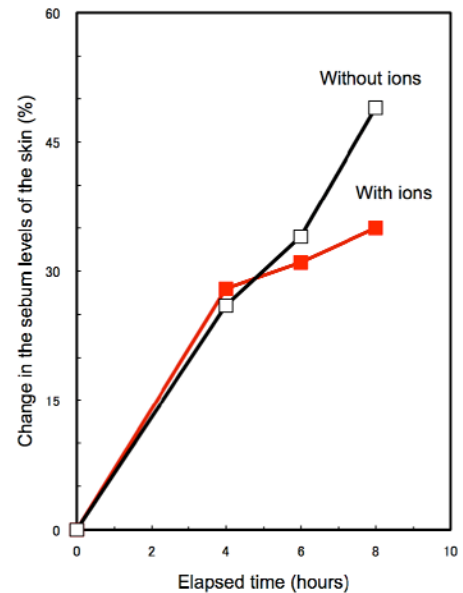


Figure 2: Change in the amount of sebum on the skin

Mechanism by which Plasmacluster Ions Inactivate Bacteria

Plasmacluster Ions are composed of positive and negative ions, and float in the air surrounded by water molecules. They surround bacteria adhering to the skin and, reacting only on the surface of the bacteria, form OH radicals that rob the cell membrane protein of hydrogen (H). This severs the protein, causing the cell membrane to fail and inactivating the bacteria. The OH radicals bond with the liberated hydrogen (H) to form water molecules (H₂O), and return to the air.

Plasmacluster Ions are the same kind of ions that exist in nature, and their safety has been confirmed by independent organizations.

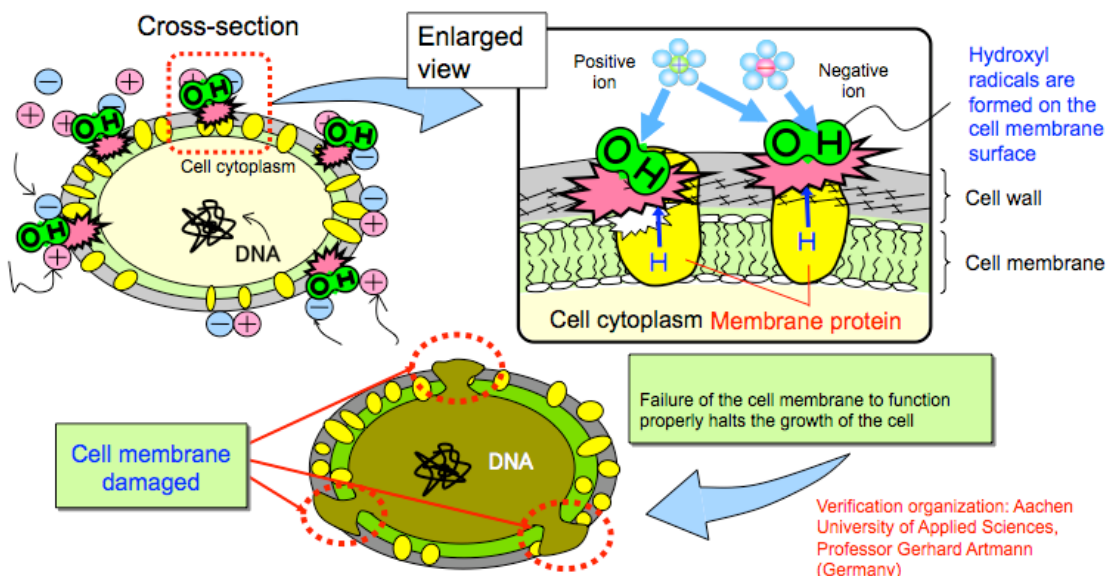


Figure 3: Mechanism by which bacteria are inactivated

Positive and negative ions decompose the bacteria by severing the protein in the cell membrane on the surface of the bacteria, thereby inhibiting its activity.

Comment by Mr. Tomohiro Sugino, Representative Director of Soiken Inc.

The effectiveness of Plasmacluster Ions in inhibiting the growth of harmful bacteria that are the cause of rough skin without affecting the state of the friendly bacteria that maintains skin health was confirmed. Based on these tests, Plasmacluster technology can be expected to be one measure to maintain the health and integrity of the skin.

About Soiken Inc.

Soiken was founded as Soiken Limited in 1994 and underwent reorganization to become Soiken Inc. in 2001. The company has since been developing businesses related to medical marketing support and providing specific health care advice related to lifestyle diseases, as well as conducting clinical trials of foods and devices, making use of its independently developed technologies for biomarkers and assay systems.