

Ionic Brushing Superpowers

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Technical Brochure

ION-Sei

At Sanyei we believe, true to the Japanese way of thinking, that mouth care directly relates to being healthier and happier in body and therefore happier in your life. ION-Sei™ is a new innovation in brushing, giving a deep and gentle clean charged with ionic superpowers.

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ION-Sei's superpowers lie in its patented technology. Whereas most electric toothbrushes only remove some of the plaque and bacteria (*S. Mutans**), ionic technology actually suppresses the bacteria causing plaque too.

The ION-Sei electric toothbrush uses an Ultra Violet (UV) LED light that reacts with a Titanium Dioxide bar in the brush handle, to create ions that suppress the bacteria that cause plaque.

The negative electrons are sent to your mouth via water or saliva. Although ION-Sei uses advanced technology, it harnesses nature using "water and light".

ION-Sei also works with your body's natural electrical charge through a conductor on the handle, producing a weak charge that inhibits bacterial growth and helps to attract bacteria from teeth onto the brush.

The technology used to create these super powers are proprietary and patented. The TiO₂ (titanium dioxide) semiconductor" and "UV LED" negative electron generation, are unique to ION-Sei.

* *Streptococcus mutans* is a bacteria that inhabits the human oral cavity. It produces plaque and acids that break down tooth enamel and cause dental caries (cavities).

The 3 ION-Sei™ Technologies

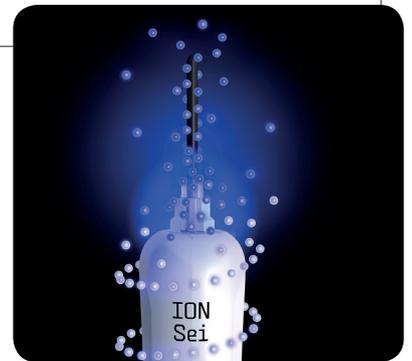


31,000 strokes / min sonic vibrations

Our gentle-on-gums brushing has been specially designed to take better care of your mouth. There are 3 different brushing modes to suit your brushing needs.

UV LED light and patented TiO₂ bar

UV light strikes* the TiO₂, (titanium dioxide) bar and makes the OH radical (hydroxyl radical), generating ions**.



Weak current from conductor panel

The ION-Sei works with your body's natural electrical charge - producing an opposite weak charge that inhibits bacterial growth and helps to attract bacteria from teeth onto the brush.

* **Photocatalytic Effect** - UV light strikes TiO₂, OH radical (hydroxyl radical, •OH) is generated/ OH radical breaks the S. Mutans bacteria and bacteria which are in plaque.

** **UV LED Light + TiO₂ * Patented** - When UV LED light strikes the wet TiO₂ * bar, an electron(e-) is generated.

Detail of our patents

Sanyei developed this innovative electric toothbrush with the cooperation of our partner Shiken Corporation.

Shiken Co., Ltd. is a specialist in oral care, founded in Osaka in 1981. Sanyei developed the ION-Sei electric toothbrush with their own "Electronic Toothbrush Patents" and "Titanium Oxide Production Patents", they jointly developed and jointly own the "titanium rod + UV-LED" patents.

3 important patents

1 Titanium dioxide rod (manufacturing) EP1752999

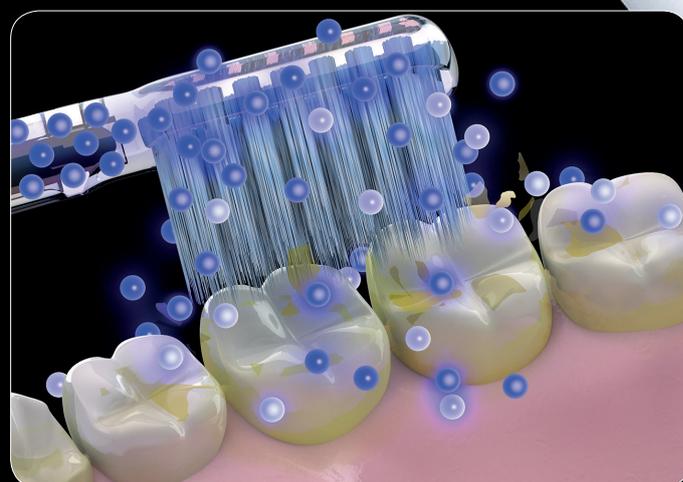
A technology for producing titanium dioxide rods, which is the key part in achieving a photocatalytic function.

2 Enhanced photocatalytic effect EP1174055

A patent for electronic toothbrush that uses a battery to flow current to a titanium rod to further enhance the effect of the photocatalyst.

3 Titanium rod and UV LED JP5820494

With (jointly) a patent for incorporating a UV-LED and a photocatalyst (titanium rod) in the main body, this UV LED technology makes it possible to obtain a photocatalytic effect even in an environment without UV light (a dark place or a place with LED lighting).



Evidence 1 - Plaque adherence

To confirm ION-Sei technology effects on plaque, apatite pellets with a crystal structure equivalent to that of teeth were tested by a comparative brushing test, to determine the adhesion levels of a strain of *S. Mutans* to the tooth surface.

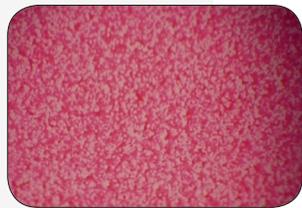
After 50 brush strokes of the general toothbrush and ION-Sei brush, the pellets were incubated for 12 hours at 37° C (body temperature) in a medium containing *S. Mutans* strain, which is the leading cause of dental caries. This showed that with a normal toothbrush heavy bacterial breeding occurred, but with ION-Sei there was no bacteria attached at all.

Normal
toothbrush
without TiO₂ bar

ION-Sei™
Technology
with patented
TiO₂ bar



0 Times



50 Times



Reference

Inhibition of the adhesive ability of *Streptococcus Mutans* on hydroxyapatite pellet using a toothbrush equipped with TiO₂ semiconductor and solar panel.

Reported by Department of Behavioral Pediatric Dentistry, Okayama University in Japan.

*This test was done by Soladey Toothbrush(Shiken Corporation) which has the same technology as ION-Sei.

Suppression of bacteria and Improvement in gum disease

Evidence 2 - Suppression of bacteria

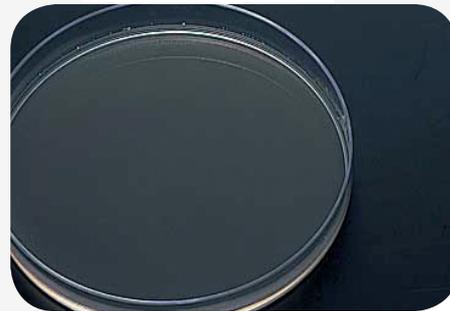
TiO₂ bar with UV radiation was soaked in a strain of S. Mutans solution for 3 minutes and then cultured on agar medium for 48 hours. It has been confirmed that ION-Sei technology had sterilized the toothbrush and no bacterial growth was observed, but breeding of S.Mutans bacteria was observed when ION-Sei technology was not used.

**Without
ION-Sei™
technology**



Reported by BOKEN QUALITY EVALUATION
INSTITUTE in Japan

**With
ION-Sei™
technology**



Evidence 3 - Improvement in gum disease

Clinical trials conducted with elderly patients suffering from severe periodontitis (gum disease), indicated a significant reduction in Gingival Crevicular Fluid as a result of using ION-Sei technology, when compared with an identical toothbrush with the technology switched off.

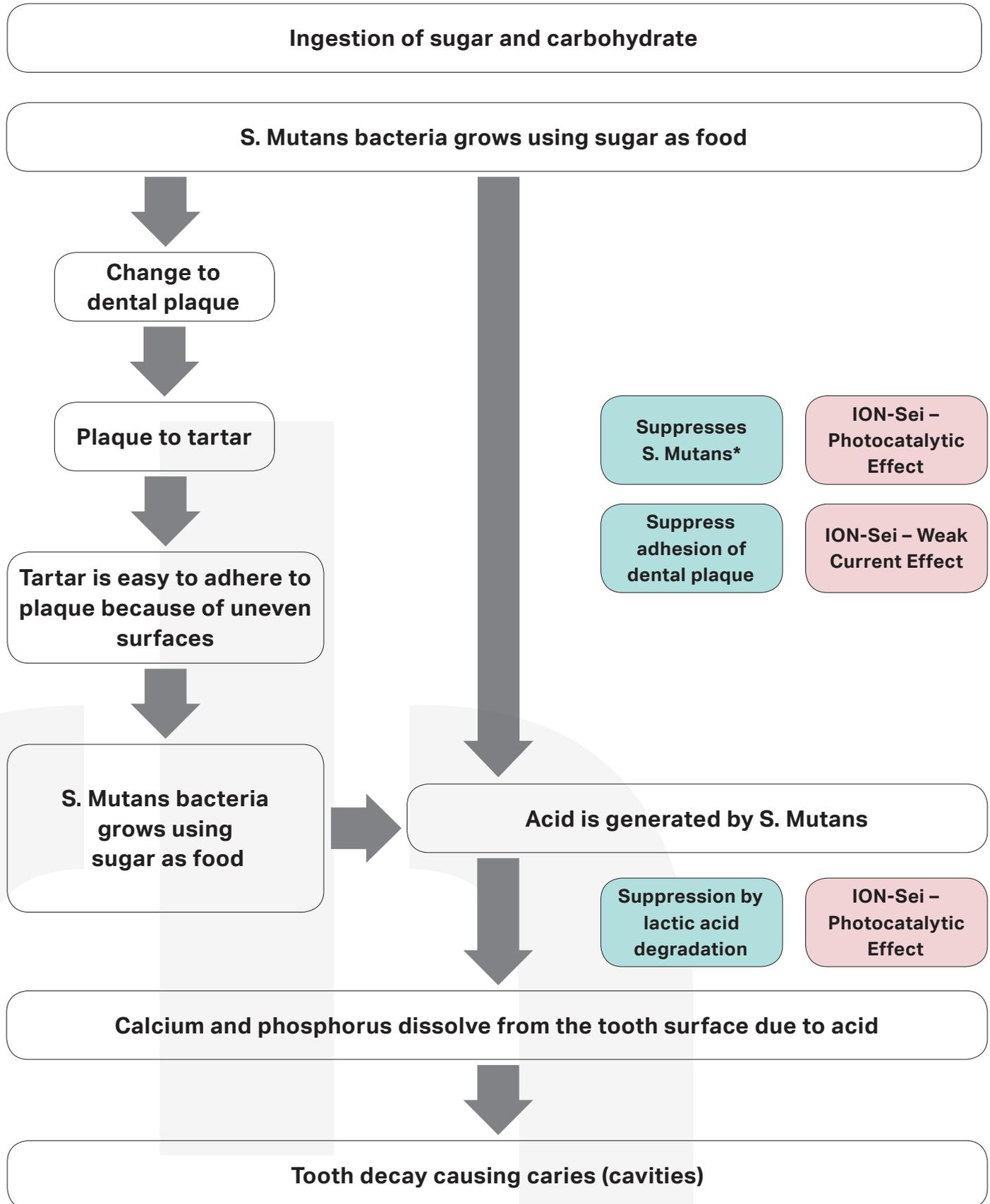
Reference

Oral Care Restoration

Reported by Yamaguchi University in Japan.

*This test was done by Soladey Toothbrush(Shiken Corporation) which has same technology as ION-Sei.

The process tooth decay or caries



Summary benefits

- Design and thinking (Japanese technology, German designed).
- Innovation in toothbrushes using innovative(unique) technology.
- Creating a longer lasting and deeper clean, through ionic technology - reduces the bacteria sticking to teeth and therefore plaque build-up, gum disease and cavities.
- Softer on the mouth, while still being very effective - 31,000 sound wave technology strokes.
- More natural cleaning option using water instead of toothpaste (if wanted).
- Holistic health - cleaner mouth, healthier body, happier life - health benefits > Life enjoyment.

The key benefit

Suppress breeding of bacteria which makes plaque.

Reduce risk of caries.

Keeps tooth surfaces smooth. Less plaque.

Effect (image)

Leading electric toothbrush

Before brushing



After brushing



Next morning



ION-Sei

Before brushing



After brushing



Next morning



ION-Sei brush heads

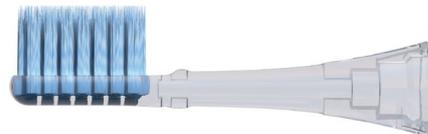
GOOD to brush the GUM LINE

ION-Sei has a gentle action which is good to brush along the **GUM LINE** which has a high risk of potential problems, such as gum disease.

Original Spiral Bristle STANDARD
For extra plaque removal.



Original Spiral Bristle SOFT
Tapered bristles reach deep between your teeth.



Original Spiral Bristle COMPACT SOFT
For more effective cleaning of back teeth.



Not included in original package.

ION-Sei specification

Waterproof | Handle IPX5 and charger stand IPX7.

Brushing Modes | Deep, standard, sensitive.

Size | Diameter $\Phi 31$ mm, length 234 mm (with brush) /210 mm (without brush).

Weight | 96g (with brush) /93g (without brush).

Brush | 2 brush heads shipped with the product (soft and standard).

Recharge Base (100-240v) | The transparent removable stand cover, makes it both easy to place the handle for charging, but also cleaning.

The charging system is a USB, and it has 2 different plugs, you can charge in UK and EU.

Battery | Nickel-metal hydride battery was selected, not Lithium ion, as a safer option. We respect your safety.

Charging time | Approx. 10 hours operating time:
Approx. 40 cleans (1 clean = 2 min).

Metal Allergy Free



Sanyei Corporation

Sanyei has a vision: to inspire people to experience Japanese comfort, and enjoy their lives more through cleverly designed lifestyle goods. Established in 1946 with HQ in Tokyo, Japan, they now have offices worldwide, opening their first overseas office in Hong Kong in 1958, and then Germany in 1969. From being traditionally manufacturers of technology and patents, today they work with many well-known global businesses in technology, manufacturing, patents and distribution-also expanding their own brand business worldwide.

Home appliances

Sanyei's home appliance department, which includes ION-Sei, has an international marketing team, a laboratory and its own factory. They continue to fulfil their company mission of bringing more comfort and enjoyment into people's lives through the products they design and manufacture.

The ION-Sei project

For the ION-Sei project, Sanyei focuses on the personal care market with patented technology. They are working on a wide range of innovations under the same brand name. One of the first in the range is the ION-Sei toothbrush-with more products coming soon.

Production

ION-Sei is made in our own state-of-the-art Japanese Factory located in China.

Sanyei Group has had a home appliance manufacture in China since 1978.

The factory has held ISO9001 (quality management) and ISO14001 (environmental management) for many years, but also follows strict Japanese safety and quality standards.



ION-*Sei*

www.ion-sei.com