IONIC TOOTHBRUSH

Unique technology for premium oral care

Increasing number of renowned pediatricians and dental pediatricians are agreeing upon the paramount importance and effect of the proper oral care on children's overall health and proper development of the children. Well respected authors that publish in International Journal of Clinical Pediatric Dentistry, European Journal of Pediatric Dentistry as well as Pediatric Dentistry journal of American Academy of Pediatric Dentistry have continuously pointed out that the condition of oral health affects the physical, mental, and emotional well-being of a child. Poor oral health goes beyond, causing tooth decay and gum diseases. In fact, it could lead to terminal illnesses. Only some of the serious effects of bad oral health are tooth decay, gum disease, digestive issues, low self-esteem, issues with speech. Even more, the formation of the plaque and excessive accumulation of the bacteria in the child's mouth can enable harmful bacteria and various diseases to enter the bloodstream through infected gums and can cause heart disease, dementia and respiratory diseases.

Maintaining good oral health goes a long way in preventing further health complications for children. That is why Ionic Corporation from Japan has created the Ionic toothbrush that fosters the power of negative Ions to provide second to none oral care for children and their caregivers.

Their IONICKISS toothbrush is the first toothbrush on the market that works on the basis of ionic technology. IONICKISS enables the premium oral care by using the basic principles of physics. Positively charged saliva acts as a binder for bacteria and teeth, thus creating dental plaque that attaches to the teeth. IONICKISS toothbrush produces the negative ions which attracts positive ions and loosens the bond between teeth and plaque, making plaque easier to remove by brushing. Clinical study “Clinical evaluation of an ionic toothbrush in the removal of established plaque and reduction of gingivitis” done at Marquette University[1] showed the statistically significant beneficial effect in lower plaque and gingivitis scores after only 6 months as shown by the table below. Ten years later a study[2] was done that clearly concluded that results showed a significant reduction in all the parameters. It was found that both active and inactive ionic

[1] Ronald L. van Swol (*Professor and Director, Division of Periodontics, Marquette University, School of Dentistry, Milwaukee, Wisconsin*) and associates, “Clinical evaluation of an ionic toothbrush in the removal of established plaque and reduction of gingivitis”;1996.

[2] J Deshmukh (*Department of Periodontics, College of Dental Sciences, Davangere 577004, Karnataka, India*), Clinical evaluation of an ionic toothbrush on oral hygiene status, gingival status, and microbial parameter, 2006

toothbrushes reduced the plaque index and gingival bleeding index scores significantly with active ionic toothbrushes being more effective as compared to inactive ionic toothbrushes. There was no soft tissue trauma following the use of both types of toothbrushes, which showed that ionic toothbrushes were equally safe for regular long-term use.

It is also important to mention the study published in 1999 named "The effectiveness of an ionic toothbrush in the removal of dental plaque and reduction on gingivitis in orthodontic patients[3]" that found that the ionic toothbrushes effectively reduced plaque and gingivitis in patients.

Table 2 Mean (± SD) changes in plaque and gingival indices with use of an ionic toothbrush

	Group A (test) (n = 84)	Group B (control) (n = 30)	Significance
	Plaque Index		
Baseline	1.76 ± 0.60	2.00 ± 0.64	NS
3 Mo	1.28 ± 0.48	1.38 ± 0.33	NS
6 Mo	1.13 ± 0.44*	1.63 ± 0.64	$P = .001$
Difference (3 Mo)	0.50 ± 0.04	0.62 ± 0.21	NS
Difference (6 Mo)	0.63 ± 0.08	0.37 ± 0.00	$P < .05$
	Gingival Index		
Baseline	1.71 ± 0.53	1.68 ± 0.50	NS
3 Mo	0.87 ± 0.34	0.91 ± 0.36	NS
6 Mo	0.82 ± 0.40*	1.18 ± 0.51	$P = .001$
Difference (3 Mo)	0.84 ± 0.22	0.77 ± 0.14	NS
Difference (6 Mo)	0.89 ± 0.16*	0.50 ± 0.62	$P < .05$

* Statistically significant.
NS = not significant

The findings of the study[4] published in Acta Stomatologica Croatica in 2020 clearly states that: "based on the results obtained, it can be concluded that the ionic brush, along with mechanical cleaning, has an additional effect that helps maintain oral hygiene. By changing the charge of the tooth, the plaque adheres less to it."

Additionally, a study "Effectiveness of an Ionic Toothbrush with a Lithium Battery in the Removal of Dental Plaque"[5] proved that ionic toothbrushes, primarily designed to effectively control the dental plaque by producing a minute current that is conducted between the toothbrush and the human body in order to exert an effect on the electric coupling that exists to hold oral bacteria to teeth, have a therapeutic effect against gingivitis as well as the plaque removing ability.

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[3] J J Pucher (*Department of Veterans Affairs, Veterans Administration, Greater Los Angeles Healthcare System, Los Angeles, California, USA.),* The effectiveness of an ionic toothbrush in the removal of dental plaque and reduction of gingivitis in orthodontic patients, 1999.

[4] Karlović Zoran (*Full Professor, Department of Endodontics and Restorative Dentistry, School of Dental Medicine University of Zagreb*), The effectiveness of an Ionic toothbrush in maintaining oral hygiene, 2020

[5] Toshihiro Ansai, Sachiko Kasai, Chie Nakayama, Tomoko Kamasaki, Shuji Awano, Sumio Akifusa (*Department of Preventive Dentistry of the Kyushu Dental College, Kitakyushu Japan*); Effectiveness of an Ionic Toothbrush with a Lithium Battery in the Removal of Dental Plaque; 2000.

Table 1 Changes in PHP Index between groups for 6 weeks

Group (N)	Baseline	Stage I (2 weeks)	Stage II (2 weeks)	Stage III (2 weeks)
A (9)	18.00±6.12	IT 11.67±7.94	RT 15.44±7.59	CT 16.89±6.01
B (8)	15.13±6.45	RT 10.00±8.00	CT 13.75±6.89	IT 13.75±7.48
C (9)	19.22±3.93	CT 16.56±6.98	IT 13.22±6.22	RT 16.00±6.98

*: $p<0.05$, Mean±SD

IT : Ionic toothbrush
RT : Ionic toothbrush which is powered by a reversed current circuitry
CT : Control ionic toothbrush which had the battery removed

It is important to mention that during these studies no effort was made to change the subjects' brushing habits, although they were instructed to hold the toothbrush properly. They were also told to use only their assigned toothbrush for the duration of the study. This makes IONICKISS very easy to use and presents a perfect ally for parents who are taking care of their children's oral hygiene.

A study named "Comparison of sonic and ionic toothbrush in a reduction in plaque and gingivitis[6]" compared the efficiency of the premium sonic oral care toothbrush and manual ionic toothbrush. Study has shown that the difference in parameters was statistically nonsignificant and that both the toothbrushes are clinically effective in removing plaque and improving the gingival conditions. This finding actually proves that IONICKISS manual toothbrush is as effective as the premium electronic toothbrushes that are often at a higher price tier. That is one more argument supporting the claim that IONIC corporations' electronic toothbrushes that have both sonic and ionic technology are by far the most effective oral care product.

Comparison of reduction in gingival index at different time intervals

Time interval (Days)	Sonic		Ionic		Difference	
	Mean reduction±SD	% Reduction	Mean reduction±SD	% Reduction	*P* value	Significance
0-15	0.32±0.54	25.2	0.21±0.56	18.1	0.37	NS
0-30	0.55±0.46	43.3	0.43±0.53	37.1	0.50	NS
0-45	0.63±0.59	49.6	0.52±0.63	44.8	0.53	NS
15-30	0.23±0.24	24.2	0.21±0.25	22.1	0.92	NS
30-45	0.08±0.25	11.1	0.09±0.18	12.1	0.18	NS

Mann-Whitney Test, $P<0.05$, $P<0.01$ - Sig. $P<0.001$ – HS

[6] Guljot Singh, D. S. Mehta, Shruti Chopra, and Manish Khatri, Comparison of sonic and ionic toothbrushes in a reduction in plaque and gingivitis, 2011;

Comparison of reduction in plaque index at different time intervals

Time interval (Days)	Sonic		Ionic		Difference	
	Mean reduction±SD	% Reduction	Mean reduction±SD	% Reduction	*P* value	Significance
0-15	0.48±0.67	27.1	0.53±0.58	30.3	0.78	NS
0-30	0.75±0.59	42.4	0.81±0.62	46.3	0.27	NS
0-45	0.75±0.70	44.6	0.77±0.70	44.0	0.94	NS
15-30	0.27±0.53	20.9	0.29±0.53	22.9	0.82	NS
30-45	0.04±0.64	3.9	0.04±0.55	4.3	0.69	NS

Mann-Whitney Test, $P<0.05$, $P<0.01$ - Sig. $P<0.001$ – HS

Additionally, a clinical study "Clinical comparison of an electric-powered ionic toothbrush to a manual toothbrush in a plaque reduction: randomized clinical trial[7]" published in International Journal of Dental Hygiene concluded that owing to both electric-powered and anion activation, the plaque removal efficiency was improved in the molar area that showed low accessibility for toothbrushes.

Most importantly is to mention the study "Manual Toothbrushes: Effect on Plaque and Oral Hygiene Status in Children[8]"from 2019 that showed that there was significant difference in all the mean values in all the parameters. It concluded that the ionic toothbrush was superior to the manual toothbrush when measuring effectiveness in removing plaque and improving the gingival conditions.

As already described IONICKISS toothbrushes are using the power of Ions to fight plaque and gingivitis. By fostering the power of negative ions IONICKISS is using applied physics and not chemistry to provide perfect oral care. Latest studies, such as "Impact of fluoride on neurological development in children[9]" have shown the potential side effects of exposure of kids to fluoride. Mentioned study has shown that children in high-fluoride areas had significantly lower IQ scores than those who lived in low- fluoride areas. That is why IONICKISS takes great pride in being the only toothbrush in the market that can be used without the toothpaste.

[7] Takahiro Ikawa (Department of Periodontology, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan and Department of Periodontology, Faculty of Odontology, Malmö University, Malmö, Sweden), 2020;

[8] Chandra S, Jain N, Garg R, et al. Ionic vs Manual Toothbrushes: Effect on Plaque and Oral Hygiene Status in Children. Int J Clin Pediatr Dent 2019;12(5):375–378;

[9] Philippe Grandjean (*adjunct professor of environmental health at Harvard School of Public Health (HSPH))* and associates*,* Impact of fluoride on neurological development in children, Journal Environmental Health Perspectives, 2012.