Junji Tagami

1. Topic in Research Achievements in the Year 2006

Among several research programs that have been undertaken to establish an appropriate diagnostic method and to develop minimally invasive restorative and preventive therapy for primary and secondary caries ozone and fluoride-oligomer are being investigated as a disinfectant using the AMS.

On the other hand, a smaller version would allow in vivo pH-imaging characterization of caries lesions in the oral cavity. Recently, a micro-pH sensor using an Ion Sensitive Field Effect Transistor (ISFET) has been developed to overcome the problem of the glass and antimony electrode. The ISFET sensor is made of a Si-semiconductor, and the surface of this sensor is composed of tantalum oxide (Ta2O5). The ISFET electrode could record the pH from small volumes of fluid and the results agreed with the other pH sensitive electrodes. This sensor has the advantage of being simple to calibrate, it is stable after calibration, can be stored dry, is durable and has a short response time. This study was designed to evaluate the pH of the surface of active or arrested carious dentin from extracted teeth using a newly developed micro-pH sensor, and to compare the relationship between different pH measurement techniques.

In another line of study, the ultrastructure of the dentin-adhesive interface after in vitro sequential challenge by acidic and basic chemicals around adhesive restorations had been investigated successfully.

Ozone is one of nature’s most powerful oxidants and is reactive towards many biomolecules. The potential of ozone was investigated on inactivation of cariogenic bacteria in single and consortium biofilms in vitro using Streptococcus mutans MT8148, Streptococcus mutans GS5, Streptococcus gordonii and Lactobacillus casei IAM 12473. Ozone has shown an antibacterial effect on cariogenic mutans streptococci (Streptococcus mutans MT8148, Streptococcus mutans GS5, Streptococcus gordonii) and lactobacilli cells embedded in water-insoluble glucans of the artificial biofilms. In a two dimensional electrophoresis (2DE) analysis it was understood that ozone destroys S. mutans cell membrane proteins.

2. Publications in the year 2006

Nikaido T, Takada T, Kitasako Y, Ogata M, Shimada Y, Yoshikawa T, Nakajima M, Otsuki M, Tagami J, Burrow MF.
Retrospective study of five-year clinical performance of direct composite restorations using a self-etching primer adhesive system.

Nakajima M, Hosaka K, Yamauti M, Foxton RM, Tagami J.
Bonding durability of self-etching primer system to normal and caries-affected dentin under hydrostatic pulpal pressure in vitro.

Umino A, Nikaido T, Sultana S, Ogata M, Tagami J.
Effects of smear layer and surface moisture on dentin bond strength of a waterless all-in-one adhesive

Kitasako Y, Shibata S, Tagami J.
Migration and particle clearance from hard-setting Ca(OH)\textsubscript{2} and self-etching adhesive resin following direct pulp capping.


Kitasako Y, Ikeda M, Burrow MF, Tagami J.
Oral health status in relation to stimulated saliva buffering capacity among Japanese adults above or below 35 years of age.

Kitasako Y, Ikeda M, Burrow MF, Tagami J.
A technique using resin composite with orthodontic wire to rapidly replace a missing tooth. *Denl Traumatol* 2006 (in press).

Kitasako Y, Ikeda M, Tagami J.
Pulpal responses to bacterial contamination following dentin bridging beneath hard-setting calcium hydroxide and self-etching adhesive resin system.
*Denl Traumatol* 2006 (in press).

Coronal leakage inhibition in endodontically-treated teeth using resin coating

Yoda A, Nikaido T, Ikeda M, Sonoda H, Foxton RM, Tagami J.
Effect of curing method and storage condition on fluoride ion-release from a fluoride-releasing resin cement

Islam MR, Takada T, Weerasinghe DS, Uzzaman MA, Foxton RM, Nikaido T, Tagami J.
Effect of resin coating on adhesion of composite crown restoration

Inoue G, Nikaido T, Tsuchiya S, Foxton RM, Tagami J.
Morphological and mechanical characterization of acid-base resistant zone at adhesive-dentin interface - intact and caries-affected dentin comparison

Sultana S, Nikaido T, Raj A, Tagami J, Matin K.
Storage media to preserve dentin: Effects on surface properties

Wattanawongpitak N, Yoshikawa T, Burrow M F, Tagami J.
Effect of Bonding System and Composite type on Adaptation of Different C-factor Restorations

Wattanawongpitak N, Yoshikawa T, Burrow M F, Tagami J.
The Effect of Thermal Stress on Bonding Durability of Resin Composite Adaptation to the Cavity Wall
*Dental Mater J* (in press)

Murakami K, Kitasako Y, Burrow MF, Tagami J.
In vitro pH analysis of active and arrested dentinal caries in extracted human teeth using
a micro pH sensor

Cho E, Chikawa H, Kishikawa R, Inai N, Otsuki M, Foxton RM, Tagami J
Related Articles, Links Influence of elasticity on gap formation in a lining technique with
flowable composite

Waidyasekera PG, Nikaido T, Weerasinghe DD, Wettasinghe KA, Tagami J
Caries susceptibility of human fluorosed enamel and dentine
J Dent. (in press)

Moritsuka M, Kitasako Y, Burrow MF, Ikeda M, Tagami J, Nomura S
Quantitative assessment for stimulated saliva flow rate and buffering capacity in relation
to different ages J Dent. 34(9): 716-20 2006.

Moritsuka M, Kitasako Y, Burrow MF, Ikeda M, Tagami J
The pH change after HCl titration into resting and stimulated saliva for a buffering
capacity test

Maeda T, Kitasako Y, Senpuku H, Burrow MF, Tagami J
Role of oral streptococci in the pH-dependent carious dentin

Murakami K, Kitasako Y, Burrow MF, Tagami J
In vitro pH analysis of active and arrested dentinal caries in extracted human teeth using
a micro pH sensor

Hosaka K, Nakajima M, Yamauti M, Aksornmuang J, Ikeda M, Foxton RM, Pashley DH,
Tagami J
Effect of simulated pulpal pressure on all-in-one adhesive bond strengths to dentine
J Dent. (in press)

Aksornmuang J, Nakajima M, Foxton RM, Tagami J
Mechanical properties and bond strength of dual-cure composite resins to root canal
dentin
Dent Mater (in press)

Aksornmuang J, Nakajima M, Foxton RM, Tagami J
Effect of prolonged photo-irradiation time to three self-etch systems on the bonding to

Aksornmuang J, Nakajima M, Foxton RM, Tagami J
Regional bond strengths of a dual-cure resin core material to translucent quartz fiber
post

Kitayama S, Nikaido T, Ikeda M, Foxton RM, Tagami J
Enamel Bonding of Self-etch and Phosphoric Acid-etch Orthodontic Adhesive Systems
Dental Mater J (in press)

He Z, Shimada Y, Tagami J
The effects of cavity size and incremental technique on micro-tensile bond strength of resin composite in Class I cavities
Dental Materials (in press)

(SS) Yuan Y, Shimada Y, Ichinose S, Tagami J
Qualitative analysis of adhesive interface nanoleakage using FE-SEM/EDS
Dental Materials (in press)

Sadr A, Ghasemi A, Shimada Y, Tagami J
Effects of storage time and temperature on the properties of two self-etching systems
Journal of Dentistry (in press)

Sadr A, Shimada Y, Tagami J
Effects of solvent drying time on micro-shear bond strength and mechanical properties of two self-etching adhesive systems
Dental materials (in press)

3. Abstracts in the year 2006

1. K. MATIN, S Sultana and J. TAGAMI. Mapping the mineral architecture in biofilm induced WSEL by SEM-EDS. 84th General Session of the IADR, Brisbane; June 28 - July 1, 2006.


5. M.A. UZZAMAN, Y. SHIMAD, and J. TAGAMI. Shear-Bond Strength of Resin-Inlays Bonded to Mid-Coronal and Cervical Enamel. 84th General Session of the IADR, Brisbane; June 28 - July 1, 2006

6. Y. YUAN, Y. SHIMADA, S. ICHINOSE, and J. TAGAMI. Effect of Dentin Surface Characteristics on Hybrid Layer Nanoleakge. 84th General Session of the IADR, Brisbane; June 28 - July 1, 2006

7. N. WATTANAWONGPITAK, Y. TAKAKO, and J. TAGAMI. Micro-tensile Bond Strength for Dentin Cavity Floor and Wall. 84th General Session of the IADR, Brisbane; June 28 - July 1, 2006

8. J. AKSORNMUANG, M. NAKAJIMA, R.M. FOXTON, and J. TAGAMI. Regional Bond Strength of Fiber Posts to Root Canal Dentin. 84th General Session of the IADR, Brisbane; June 28 - July 1, 2006


10. T. NIKAI DO, M. ARIYOSHI, G. INOUE, M. IKEDA, Y. KITASAKO, M. BURROW, and
J. TAGAMI Dentin bond durability of resin cements over 10 years. 84th General Session of the IADR, Brisbane; June 28 - July 1, 2006

11. N. IWAMOTO, R. KISHIKAWA, M. NAKAJIMA, H. TAKAHASHI, N. IWASAKI, and J. TAGAMI Effect of Fiber Post on Mechanical Property of Resin Core. 84th General Session of the IADR, Brisbane; June 28 - July 1, 2006

12. T. ABO, S. UNO, E. YOSHIDA, J. TAGAMI, and T. YAMADA Bond performance of an all-in-one adhesive containing 4-MET(A) glutaraldehyde phosphoric monomers. 84th General Session of the IADR, Brisbane; June 28 - July 1, 2006


