

**EFFECT OF HYDROFLUORIC ACID SURFACE TREATMENT
CONCENTRATION ON SURFACE ROUGHNESS OF
LITHIUM DISILICATE- GLASS CERAMIC**

ABSTRACT

The dental ceramic are widely used and studied in dentistry because they are durable, aesthetically appealing and provide excellent biocompatibility. All glass-ceramic surfaces must be etched using hydrofluoric acid (HF) for increase of Surface Roughness (Ra), before cementation to tooth surface. The aim of this research was to analyze the effect of hydrofluoric acid surface treatment concentration on surface roughness of lithium disilicate glass ceramic.

The materials used in this research was lithium disilicate glass ceramic IPS e.max Press HT (Ivoclar-Vivadent, Schaan, Liechtenstein, Germany). and hydrofluoric acid solution (ACS, ISO, Reag. Europe). A total of fifteen discs of lithium disilicate glass ceramic were prepared (10 mm in diameter and 1 mm in thickness). All specimens were polished and cleaned in distilled water. Specimens were divided into 3 groups (n=5). Group A (control) was no treatment, group B was etched by 5% HF for 2 min, and group C was etched by 9.5% HF for 2 min. etched surface were observed by SEM (Scanning electron microscope). measurement of surface roughness of lithium disilicate glass ceramic was determined with surface roughness tester machine Ra (μm). The results was analyzed with one-way ANOVA and Post Hoc Tests.

The results showed that the mean surface roughness values Ra (μm) were group A (control) = $(0.0962 \pm 0.00894) \mu\text{m}$; group B = $(0.6080 \pm 0.05404) \mu\text{m}$ and group C = $(0.8920 \pm 0.10062) \mu\text{m}$. The one-way ANOVA showed there was effect of hydrofluoric acid surface treatment concentration on surface roughness of lithium disilicate glass ceramic. The Post Hoc test showed there was a difference of Ra (μm) between experimental study groups ($p < 0.05$). In conclusion, concentration of hydrofluoric acid influenced surface roughness (Ra) of lithium disilicate glass ceramic.

Key words: Hydrofluoric acid, Surface treatment, Concentration, Surface roughness, Lithium disilicate glass ceramic.

**PENGARUH APLIKASI KONSENTRASI ASAM HIDROFLUORIDA
PADA KAKASARAN PERMUKAAN
LITHIUM DISILIKAT KERAMIK KACA**

ABSTRAK

Keramik gigi sudah sering digunakan dalam dunia kedokteran gigi, karena Keramik gigi adalah material yang bersifat tahan lama, estetik, dan memiliki biokompatibilitas yang baik. Sebelum keramik- kaca disementasi ke permukaan gigi, semua permukaan keramik- kaca dilapisi dengan asam hidrofluorida (HF) untuk meningkatkan kekasaran permukaan (Surface Roughness) (Ra). Tujuan dari penelitian ini adalah untuk menganalisis pengaruh aplikasi asam hidrofluorida pada kekasaran permukaan lithium disilikat keramik kaca.

Material yang digunakan pada penelitian ini adalah lithium disilicate glass ceramic IPS e.max Press HT (Ivoclar- Vivadent, Schaan, Liechtenstein, Germany), dan larutan asam hidrofluorida (ACS, ISO, Reag. Europe). Pada penelitian ini, digunakan lima belas cakram lithium disilikat keramik kaca dengan diameter 10 mm dan ketebalan 1 mm. Spesimen dibagi menjadi 3 kelompok (n=5). Kelompok A tidak mendapatkan perlakuan. Kelompok B, spesimennya diaplikasikan dengan 5% HF selama dua menit. Kelompok C, spesimen diaplikasikan dengan 9,5% HF selama dua menit. Permukaan spesimen yang telah diaplikasikan HF, diamati menggunakan mikroskop optik. Pengukuran kekasaran permukaan keramik diukur menggunakan mesin kekasaran permukaan. Hasil pengukuran dianalisis menggunakan ANOVA satu arah dan Post Hoc Tests.

Hasil penelitian menunjukkan rerata analisis nilai kekasaran permukaan kelompok A (kontrol) = $(0,0962 \pm 0,00894) (\mu m)$; Kelompok B = $(0,6080 \pm 0,05404) \mu m$, dan kelompok C = $(0,8920 \pm 0,10062) (\mu m)$. ANOVA dan Post Hoc menunjukkan adanya perbedaan kekasaran permukaan Ra (m) pada kelompok studi eksperimental (p-value < 0,05). Kesimpulan penelitian ini adalah konsentrasi asam hidrofluorida mempengaruhi kekasaran permukaan (Ra) dari lithium disilikat keramik kaca.

Kata kunci: asam hidrofluorida, aplikasi permukaan, Konsentrasi, kekasaran permukaan, Lithium disilikat keramik kaca.