

## **EFFECT OF ACTIVATED CHARCOAL TOOTHPASTE ON THE SURFACE ROUGHNESS OF FELDSPATHIC CERAMIC**

**Objectives:** Activated charcoal based toothpaste has gained popularity. Although there are studies showing that this toothpaste has an abrasive effect on enamel, there is not enough information about its effects on feldspathic ceramic. The aim of this study was to determine the effect of activated charcoal toothpaste usage on the surface roughness of feldspathic ceramics.

**Materials and Methods:** Specimens were prepared from feldspathic ceramic blocks (Vitablocs Mark II) by cutting in a thickness of 2 mm. Surfaces of the specimens were manually polished by the same operator and initial Ra values were measured by a contact profilometer. Then, specimens were divided into three groups (N=24, n=8): Unbrushed control group (C), brushed group with activated charcoal toothpaste (AC), brushed group with only distilled water (DW). Tooth brushing simulation was applied using tooth brushing simulator (SD Mechatronic) with forward-backward motion in a linear distance of 5 mm, at speed of 25 mm/s, under 200g pressure for 10000 cycles to simulate 1 year of usage. The final roughness values of the specimens were measured after brushed. Data were statistically evaluated by paired t-test to evaluate before and after roughness changes in brushed groups and one-way ANOVA and post-hoc Tukey test to comparison all groups ( $\alpha=.05$ ).

**Results:** Increasing in surface roughness were statistically significant in both AC and DW group when compared before and after roughness values ( $p<.001$  and  $p=0.003$ , respectively). There were significantly differences between unbrushed control and brushed groups. The highest roughness values were observed in group AC. Group DW was exhibited higher roughness than control group ( $p=.016$ ) but lower roughness than AC group ( $p<.001$ ).

**Conclusion:** Brushing with activated charcoal toothpaste resulted in significant changes in feldspathic ceramic surface roughness. Therefore, activated charcoal toothpastes should not be preferred in patients who had feldspathic ceramic-based restorations.

**Keywords:** Activated charcoal; toothbrushing; dental porcelain