

The effect of different thicknesses and background colors on the translucency of different CAD/CAM Ceramic Materials

Al Maha Al Gazlan¹, Shahad Al Tuwajiri¹, Afnan Al Fouzan² and Hanan Al Otaibi³
King Saud University, Saudi Arabia

Aim of the study: To compare the translucency of different thicknesses of different CAD/CAM ceramic materials (zirconia reinforced lithium silicate (Suprinity), Lithium disilicate (IPS e.max CAD), and hybrid ceramic (Enamic)) against different background colors.

Materials and methods: 180 disks of three different materials: zirconia reinforced lithium silicate (Suprinity, VITAZahnfabrik, Bad Sackingen, Germany), Lithium disilicate (IPS e.max CAD, IvoclarVivadentAG, Schaan, Liechtenstein), and hybrid ceramic (Enamic, VITA Zahnfabrik, Bad Sackingen, Germany) were prepared. Each material was cut flat to five different thicknesses (0.4 mm, 0.5 mm, 1 mm, 1.5 mm, and 2 mm) 12 disks of each thickness.

A Spectrophotometer (Color-Eye 7000A Spectrophotometer, X-Rite, Grand Rapids, Michigan, USA) was used to measure the translucency and color change of all the specimens on different backgrounds (black, white, gray, A2 dentin, C4 dentin and metal)

The translucency was measured using a contrast ratio (CR) in which $CR = Y_b/Y_w$: reflectance of light of the material on a black surface (Y_b) to the reflectance on a white surface (Y_w).

Statistical analysis was done using SPSS software and Anova test.

Results: When comparing the translucency according to thicknesses, there was a statistically significant translucency difference between the 1mm, 1.5mm, and 2mm thicknesses (p value = 0.001). On the other hand, The translucency of the smaller thicknesses (0.4 mm and 0.5mm) did not have a statistical significance.

Conclusion: In conclusion, the more the thickness increases, the less the translucency. The differences between the materials become more apparent with the increase in thickness. In addition, When comparing the three types of materials, zirconia reinforced lithium silicate (Suprinity) appeared to have the highest translucency values.