

## Shear bond strength of a bracket-bonding system cured with a light emitting diode or halogen based light curing unit at various polymerization times

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**Objective:** The aim was to determine and compare the shear bond strength of bracket-bonding system cured with Light emitting diode and Halogen based light curing unit at various polymerization times.

**Methods:** Ninety six human maxillary premolar teeth extracted for orthodontic purpose were divided into four groups, according to the light-curing unit and exposure times used. In the Halogen group, the specimens were light cured for 20 and 40 seconds. In the LED group, the specimens were light cured for 5 and 10 seconds. Stainless steel brackets were bonded and stored in distilled water at 37°C for 24 hours and then submitted to SBS testing.

**Results:** The highest mean SBS was obtained with the Halogen 40 seconds (18.27MPa) followed by Halogen 20 seconds (15.36 MPa), LED 10 seconds (14.60 MPa) and least with LED 5 seconds (12.49 MPa) group. According to analysis of variance and Tukey multiple comparison test, Shear bond strength of Halogen 20 seconds group was not significantly different from other groups. LED 5 seconds group was not significantly different from LED 10 seconds group. Whereas Halogen 40 seconds group was significantly different from LED 5 seconds & LED 10 seconds group.

**Conclusion:** Polymerization with both Halogen and LED resulted in shear bond strength values which were clinically acceptable for orthodontic treatment in all groups. Hence, for bonding orthodontic brackets, photoactivation with Halogen for 20 seconds and LED for 5 seconds is suggested.

**Key words:** Shear bond strength, Halogen curing light, LED curing light, Polymerization time

### Biography:

Sanjay Prasad Gupta completed his BDS (Bachelor of Dental surgery) from Universal College of Medical Science, Bhairahawa, Nepal in 2009 (2003-2009). Post graduation: MDS (Master of Dental surgery) in Orthodontics from Maharajgunj Medical Campus, Institute of Medicine, Kathmandu, Nepal in 2013 as a first batch of Tribhuvan University (2010-2013). First rank holder in Post graduate entrance examinations for MDS in Institute Of Medicine- Government Institute in 2010. Present Position was Assistant Professor in Orthodontics & Dentofacial Orthopedics unit, Faculty of post graduate MDS programme, Department of Dentistry, Institute of Medicine- Tribhuvan University teaching Hospital, Maharajgunj, Kathmandu, Nepal