Effect of Light Spectrum from Light Emitting Diode (LED) on Post Harvest Fruit Quality of Tomato (*Solanum Lycopersicum* L.)

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Tomato (*Solanum lycopersicum* L.) is one of the importance commercial vegetable crops in the World. This study was to investigate the effect of different light wave lengths (light colours) from LED lighting on postharvest quality and microbial growth on harvested tomato fruits. During the experiment light intensity was maintained at 5555.5 - 8333.3 lux/m^2 and temperature range was 25^0C-28^0C, relative humidity was 80% - 90%. Under different colours of LED lighting fruit quality parameters were studied such as Fresh weight Loss, TSS, Lycopene, Total Carotene, Ascorbic acid and *in vitro* microbial growth. During the storage period Fresh weight loss% was significantly high in blue and red LED lighting and the lowest was recorded in control (Dark). On 25th day highest TSS was recorded (4.50 ± 0.52%) under the blue LED light treatment whereas, the lowest TSS was recorded under the white (3.5 ± 0.52%). The highest lycopene content was recorded under the red LED light in 21st (178.56 ± 3.59 mg/kg) and 25th (237.35 ± 22.8 mg/kg) days. The lowest Lycopene content recorded in Green LED light in 21st (65.373 ± 3.59 mg/kg) and 25th (90.53 ± 22.8 mg/kg) days. At 21st day highest carotene content was recorded under the red LED light (0.3461 ± 0.0047 mg/kg). Lowest carotene content was recorded in green light (0.1274 ± 0.047 mg/kg). 1st (0.177 ± 0.048cm) and 2nd (0.333 ± 0.074cm) days after inoculating the highest *in vitro* microbe colony growth was recorded in control and there was no *in vitro* microbes colony growth in LED light treatment in 1st and 2nd days. LED light colour mainly red, white, and blue considerably effect on postharvest fruit quality of tomato such as fresh weight loss%, Lycopene content, Total solid content (TSS), Total carotene. LED light spectrum effectively suppressed microbial growth on fruit surface which evident by delaying of microbial growth in *in vitro* microbial study.

Keywords: *Fresh weight loss, in vitro microbial growth, Lycopene, Total carotene, Total Soluble Solid*