

The effects of low level laser therapy on both HIV-1 infected and uninfected TZM-bl cells

Lugongolo, MY
Manoto, SL
Ombinda-Lemboumba, S
Maaza M
Mthunzi-Kufa, P

ABSTRACT:

Human immunodeficiency virus (HIV-1) infection remains a major health problem despite the use of highly active antiretroviral therapy (HAART), which has greatly reduced mortality rates. Due to the unavailability of an effective vaccine and treatment that would completely eradicate the virus in infected individuals, the quest for new therapies continues. Low level laser therapy (LLLT) involves the exposure of cells to low levels of red or infrared light. LLLT has been widely used in different medical conditions, but not in HIV-1 infection. This study aimed to determine the effects of LLLT on HIV-1 infected and uninfected TZM-bl cells. Both infected and uninfected cells were irradiated at a wavelength of 660 nm with different fluences from 2 J/cm² to 10 J/cm². Changes in cellular responses were assessed using cell morphology, viability, proliferation, cytotoxicity and luciferase activity assays. Upon data analysis, uninfected irradiated cells showed no changes in cell morphology, viability, proliferation and cytotoxicity, while the infected irradiated cells did. In addition, laser irradiation reduced luciferase activity in infected cells. Finally, laser irradiation had no inhibitory effect in uninfected cells, whereas it induced cell damage in a dose dependent manner in infected cells.