

Several studies suggest that low power laser irradiation is capable of affecting cellular processes under different conditions. In this study, the effect of low-power laser irradiation on CHO47 cells was investigated. The cells were irradiated with a CW, 635 nm Diode laser at an energy density ranging from 2.94 to 41.16 J/cm<sup>2</sup> (power output, 100mW). The cells were grouped into: group 1 control (not irradiated); group 2 exposed to 2.94 J/ cm<sup>2</sup> ; group 3 exposed to 20.58J/ cm<sup>2</sup>; and group 4 exposed to 41.16J/cm<sup>2</sup>. The mitochondrial membrane potential (MMP) of the irradiated cells and apoptosis assay was assessed at 96, 120 and 144 hours. In comparison with the control populations, a significant increase in mitochondrial membrane potential (MMP) of irradiated cells was observed. In addition, the irradiated cells showed a significant decrease in early, late apoptotic and dead cells in comparison with their respective controls. Based on the conditions of this study, we concluded that the low-level laser inhibit the apoptotic process and increase mitochondrial membrane potential (MMP).