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In vitro Immunogenetic Effects of 532 nm Short YAG Laser Pulses on Human Lymphocytes

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ABSTRACT Incident High Energy Lasers have shown to cause damages at gross cellular and organelle levels and also at the level of DNA. In this study, the effect of high energy 532 nm short YAG Lasers at 10 pulses per second on circulating lymphocytes was performed. Apart from the damage to the genetic material of the lymphocytes as expressed as "micronuclei", the phenotypic manifestations of such a damage in terms of Immunoglobulin G production were taken into consideration. Blood samples were exposed to 532nm Nd:YAG Laser. The irradiated samples were cultured and the cells screened for the occurrence frequency of micronuclei and the culture supernatant were screened for the IgG levels by the Mancini's test or the Single Radial Immunodiffusion. The results obtained showed that 532nm Lasers induced damage to the DNA of lymphocytes which were expressed as micronucleated cells. Interestingly, at lower doses, the damages observed were more than that for the higher doses. This can be due to the lethal effects of higher doses on cells thereby, preventing the amplification of damage expression in culture. Similarly, there was no change in the IgG levels at lower doses, but showed a significant increase at higher doses.

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