

Title: Alteration of the redox signalling in liver cancer cells by non-thermal plasma and laser irradiation

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Abstract:

Over the years, the implementation of physics-based techniques into medicine have contributed to the development of novel approaches for diagnostics and treatment. Recently, new promising therapeutic approaches, namely non-thermal plasma and low-power light (laser) therapy have gained attention for the treatment of various diseases. This dissertation thesis aims to critically assess the current knowledge in the field of plasma medicine and laser irradiation. In particular, it focuses on the interaction and molecular mechanisms of non-thermal plasma and laser light irradiation in 3 different hepatic cancer cell lines. We hope that our critical analysis will help researchers to overcome challenges and develop in the future better controlled, safer, and more robust NTP- and laser-based treatment modalities.

Keywords: hepatic cancer cells, non-thermal plasma, laser irradiation, oxidative stress, redox signalling