4TH EDITION METABOLISM & CANCER

METABOLIC PROFILE OF TUMOR SKIN CELLS AFTER LOW-LEVEL LASER THERAPY

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Cell culture MV3 and NGM

Laser irradiation 35-70J/cm² Red - 660nm - 100mW

Cell viability

Metabolomics

High-resolution respirometry

Cell proliferation

Wound healing

Biphasic extraction

FACS apoptosis and cell cycle

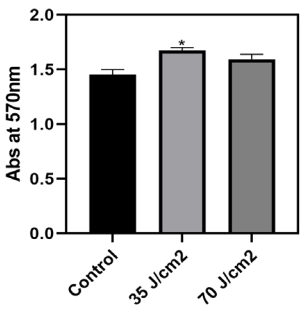
Speed vac

Phosphate buffer + DSS + D_2O

NMR metabolomics

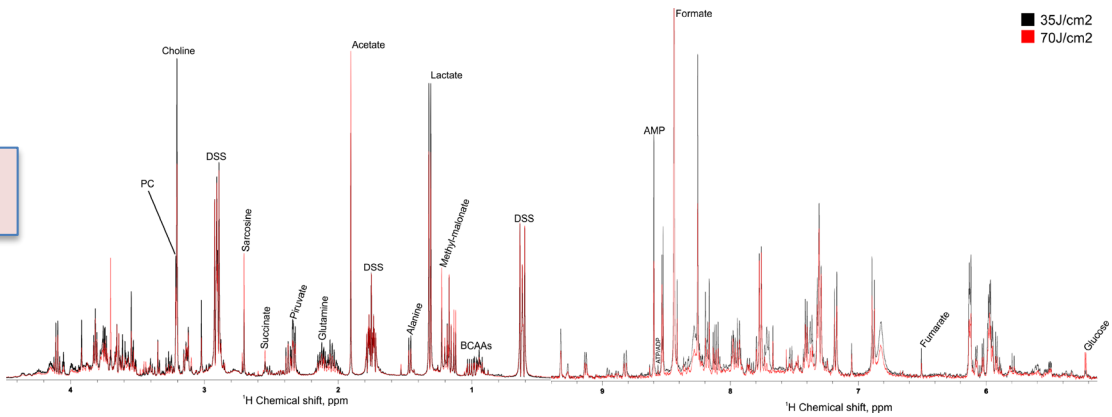
Low-level laser therapy (LLLT) is currently considered a safe and effective way for the clinical treatment of a wide range of diseases, mainly in the treatment of skin lesions and pressure ulcers, as well as for aesthetic purposes. However, evidence shows that the use of LLLT in some pigmented lesions can lead to melanomas or contribute to tumor growth. The cellular and metabolic mechanisms associated with skin cell photobiostimulation are not yet fully understood. The NMR metabolomics showed tremendous potential assembling a complete picture of integrated metabolic changes, identifying many intermediary metabolites. Our goal is to evaluate the metabolic effects of LLLT in normal and tumor skin cells. In addition, we intend to investigate the possible cellular and molecular changes in these cells. With this study, we intend to elucidate the metabolic pathways that would be associated with the differentiation, proliferation and viability of skin cells, thus contributing to the development of more suitable therapies for dermatoses.

MV3 cells 24hs after irradiation

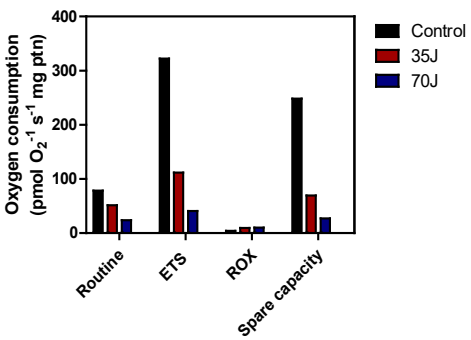


The MV3 cells irradiated with 35J/cm² show more cellular viability when compared to the control and those which were irradiated with 70J/cm².

MV3 - 1h after irradiaton



High-resolution Respirometry



Routine respiration (ROUTINE); electron transfer system (ETS); residual oxygen consumption (ROX); respiratory reserve capacity (Spare capacity).

Results and conclusion:

- **LLLT can increase the viability of metastatic invasive melanoma cells;**
- **Normal skin cells showed a metabolic profile similar to the tumor when irradiated with 70J/cm²;**
- **Melanome cells reduce glycolysis after laser irradiation with high fluence.**

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Contact information

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