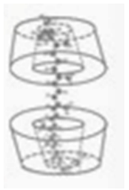
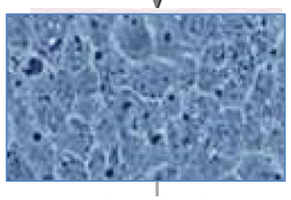


Lyc- DM-β-CD complex

UV radiation



SKIN CELLS

UV Direct Effects

Increased

DAMAGE

OXIDATIVE STRESS

✓ROS Quantification

GENOTOXICITY

CYTOTOXICITY

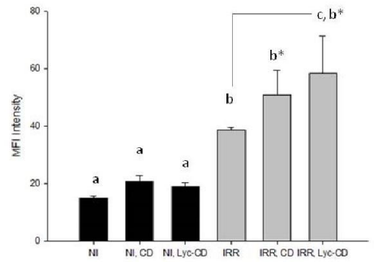
↑Higher Bax/ Bcl-2 ratio
Cytochrome c release

DNA

LIPIDS (TBARS)

PROTEINS (Carbonyl Content)

CASPASE INDUCTION



DNA Methylations (CC→TT)

Decrease Genomic Stability

Extrinsic Pathway (cytoplasm)
Initiators: Caspases 8,1

Intrinsic Pathway (Mitochondria)
Caspase 9

Upregulation of oncogenes

Silencing of Suppressor Tumor gene P53

Decreased

Executors: Caspases 3,6,7

Increased

APOPTOSIS (Cellular suicide)

HIGHER MEMBRANE PERMEABILITY/ EXTERNALIZATION OF *PS* ON MEMBRANE SURFACE

✓**ANNEXIN V** (FITC/PI) by FC/FM

GENOMIC INSTABILITY

Δ GENE EXPRESSION

✓**RT-PCR**

✓**Gene Regulation by RT-PCR: higher Bax/ Bcl-2 ratio**

✓**Cell Cycle by FC/FM: G0/G1 phase arrest + peak subsub G1**

Cell Viability

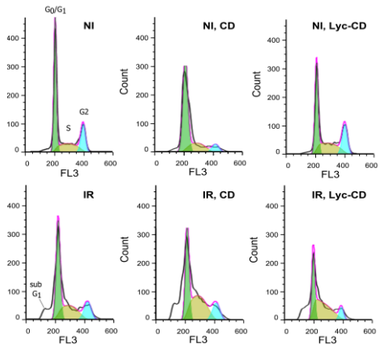
Cell Death

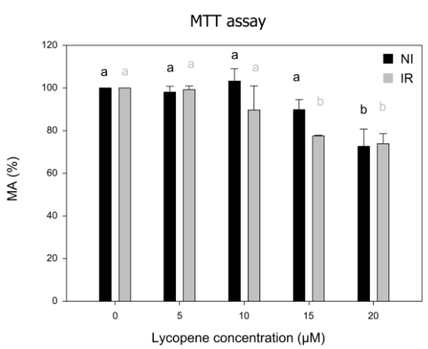
✓MTT
✓Trypan Blue

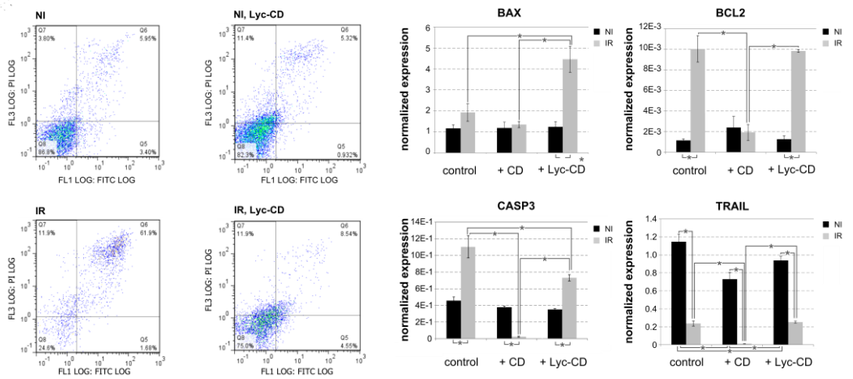
Increase

NECROSIS (Cellular lysis)

Oncogenesis?







Supplementary Material

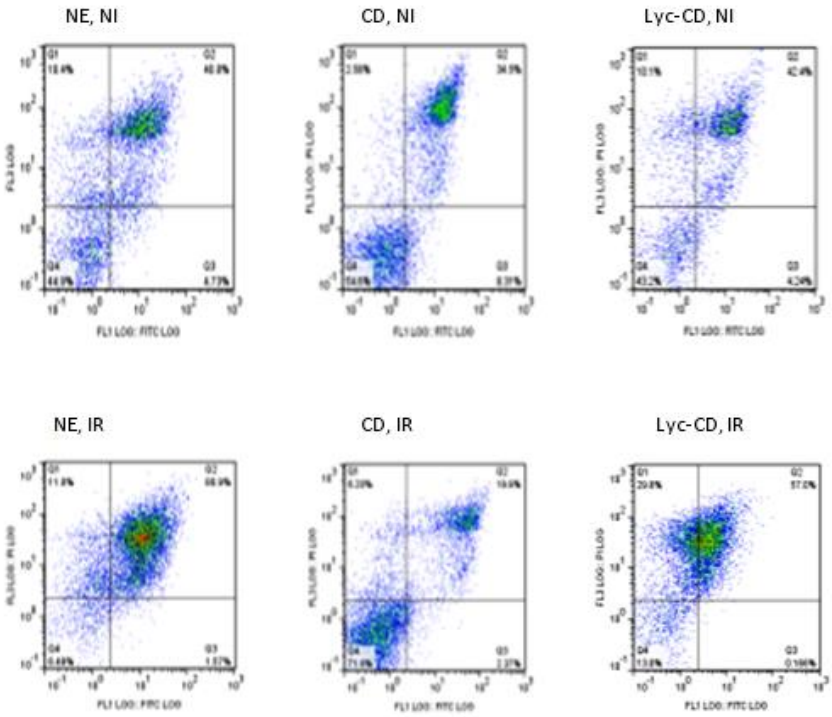
Vehicle for Lycopene

In another parallel work, THF/BHT diluted in FBS was also used to solubilize lycopene. Lin et al. (2007) demonstrated that FBS is likely responsible for the improved stability and cellular uptake of lycopene. In pilot experiments to screen for a suitable vehicle for lycopene, we observed that cells exposed to lycopene vehiculated in THF-BHT-FBS and irradiated also showed a decreased viability compared to non exposed irradiated cells (results not shown).

Effect of UV-B doses on Cell Metabolic Activity by MTT Assay

According to preliminary MTT assays, it was observed that concentrations of Lyc-CD higher than 20 µM induced a higher decrease in MA in irradiated cells. In these preliminary assays, exposure to the vehicle (CD) alone did not significantly alter the MA of non-irradiated cells.

Apoptotic markers



Representation of Annexin V-FITC Dot-Plots Gating (FL1 LOG *vs* FITC LOG) of UV-B (225 mJ/cm²) irradiated (IR) and non irradiated (NI) HaCaT cells previously exposed to 10 µM complexed lycopene (Lyc-CD) and only to the vehicle (CD) or non exposed (NE) correspondent to a complementary experiment.