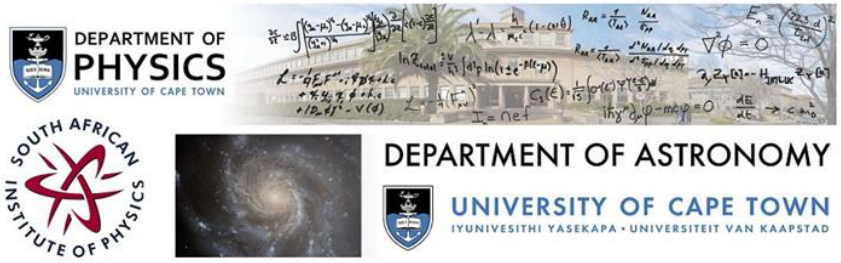

Contribution ID: **362** Type: **Oral Presentation**

The efficiency of Hypericin used in Photodynamic Therapy Treatment with low intensity laser irradiation to induce the cell death of human breast cancer cells (MCF7).

Wednesday, 6 July 2016 11:10 (20 minutes)

Abstract content
   (Max 300 words)
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Abstract. Background: Breast cancer is a life threatening heterogeneous disease, which is currently the second most common invasive cancer that affects women worldwide, after lung cancer. In addition to cancer recurrence, another challenge encountered during cancer therapy is the toxic effects cancer drugs have on healthy cells. Photodynamic therapy (PDT) offers targeted treatment of cancer cells using low intensity light (600-900 nm) in synergy with a photosensitizer (PS). A PS is, itself, a nontoxic drug and only becomes toxic to cells in the presence of light, at a specific wavelength, by inducing an overproduction of reactive oxygen species (ROS), which destroys cancer cells. The efficiency of the PS Hypericin (HYP) to induce cancer cell death after its activation using low intensity laser irradiation (LILI) was investigated in this study. Methods: A Commercially purchased breast cancer cell line (MCF-7) was treated with four different doses of HYP: 1 µM, 2 µM, 4 µM and 6 µM, and irradiated with three fluencies: 5, 10 and 15 J/cm2 using a 594 nm diode laser. The effect of HYP used in synergy with LILI was determined by assessing viability (trypan blue staining), proliferation (Adenosine triphosphate, ATP, luminescence assay), toxicity (Lactate Dehydrogenase, LDH) and cell death pathways (Caspase 3/7) of the breast cancer cells. Results: A Change in cellular morphology was seen in the PDT treated cells using a fluence of 10 and 15 J/cm2. A decrease in viability and proliferation, and an increase in cytotoxicity and caspase activity was also observed. Conclusion: HYP was identified as an efficient PS as it, together with LILI, was able to induce photo damage in MCF-7 cells. The most effective treatment combination was observed using 6 µM of HYP and a fluence of 15 J/cm2.

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