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Effects of photodynamic therapy on A375 Melanoma cells using aluminium phthalocyanine photosensitizer

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Metastatic Melanoma (MM) is highly aggressive and is among cancers causing major global deaths annually. It is imperative to find therapies that can eliminate MM and has become a major concern due to the potential for cancer relapse and metastasis, as well as the disease being accounted to be resistant to multiple forms of therapy. This *in vitro* study explores the effect of Photodynamic Therapy (PDT) using an Aluminium Phthalocyanine Photosensitizer (AlPcS4Cl) at 673 nm and a fluency of 5 J/cm², in targeting Melanoma cells (A375). Dose dependent response of AlPcS4Cl was studied on both A375 and fibroblast (WS1) cell lines and the IC₅₀ calculated from this. Significant post-irradiation signs of cell death were detected using microscopy and biochemical assays. Cell viability testing showed increased damaged cells taking up Trypan Blue Dye. A decrease in cell proliferation was observed through the measurement of Adenosine Triphosphate (ATP) content. An increased release of Lactate Dehydrogenase (LDH) content due to cytotoxicity with increasing doses of AlPcS4Cl was measured. The study suggested an effective treatment against Melanoma cells. Enhanced capabilities of PDT for MM could possibly be achieved through gold nanoparticle (AuNP) activated increased uptake of AlPcS4Cl photosensitizer, targeting their quiescent cancer stem cells.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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