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# Phototodynamic activity of zinc monocarboxyphenoxy phthalocyane (ZnMCPPc) conjugated to gold silver (AuAg) nanoparticles in melanoma cancer cells

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## ABSTRACT:

**Photodynamic therapy (PDT) is a minimally invasive therapeutic modality for the treatment of neoplastic and non-neoplastic diseases. In PDT of cancer, irradiation with light of a specific wavelength leads to activation of a photosensitizer which results in generation of reactive oxygen species (ROS) which induces cell death. Many phthalocyanine photosensitizers are hydrophobic and insoluble in water, which limits their therapeutic efficiency. Consequently, advanced delivery systems and strategies are needed to improve the effectiveness of these photosensitizers. Nanoparticles have shown promising results in increasing aqueous solubility, bioavailability, stability and delivery of photosensitizers to their target. This study investigated the photodynamic activity of zinc monocarboxyphenoxy phthalocyanine (ZnMCPPc) conjugated to gold silver (AuAg) nanoparticles in melanoma cancer cells. The photodynamic activity of ZnMCPPc conjugated to AuAg nanoparticles were evaluated using cellular morphology, viability, proliferation and cytotoxicity. Untreated cells showed no changes in cellular morphology, proliferation and cytotoxicity. However, photoactivated ZnMCPPc conjugated to AuAg nanoparticles showed changes in cell morphology and a dose dependent decrease in cellular viability, proliferation and an increase in cell membrane damage. The ZnMCPPc conjugated to AuAg nanoparticles used in this study was highly effective in inducing cell death of melanoma cancer cells.**