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Up conversion cancertherapy

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Among many cancer therapies, chemotherapy and photodynamic therapy (PDT) have been considered in this essay. For the enhancement of the drug delivery, the use of an up-conversion material is taken into account[1]. Under near-infrared (NIR) excitation, up-conversion emits ultraviolet light. In the traditional PDT, injecting the photosensitizer(PS), as a drug, then using illumination source like laser, light emitting diodes, arcing lamps and laser in order to active PS[2]. Using upconversion can help the drug to penetrate in more depth of the tumor tissue, compared to the traditional PDT, and improve the efficiency of the drug and finally the cancerous cell death. Additionally, we have to overcome the hydrophobic character of the upconversion material by coating with silica, chitosan or polyethylene glycol (PEG)[3].

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