

## **Novel Therapeutic Approach Using Herbal Nanopowder in Photodynamic Therapy**

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### **ABSTRACT**

Photodynamic therapy (PDT) involves administration of tumor localizing photosensitizer agent that produces reactive oxygen radicals during light irradiation and ultimately leads to cell death. There are two well-defined mechanisms for generating cytotoxic species: the first mechanism produces free radicals or superoxide ions resulting from hydrogen or electron transfer; second mechanism is singlet oxygen ( $^1O_2$ ) which is generated via an energy transfer process that occurs during collision of excited sensitizer with oxygen. Many photosensitizers such as Photofrin, Hypericin, Lutetium Lexaphyrin, Protoporphyrin IX, Rose Bengal, Methylene Blue, etc., are already known and some of them are used in vivo. The need to search for natural photosensitizers such as some medicinal herbal materials as a drug substitute are recently received new interest. Moreover, nano herbal products such as nanocurcumin is currently used in vitro as a potential photodynamic therapy drug and remains a desirable therapeutic goal. Nano products extracted from herbal is found to be better quantum efficiency, reductions in toxicity and enhancing the killing rate.

