



# Combined Application of Photodynamic Treatment and Nanotechnology in Skin Cancer Treatment

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## DESCRIPTION

Skin cancer is a significant public health concern worldwide, with its prevalence rising steadily in recent decades. It is crucial to comprehend the complexities of this disease, its various types, risk factors, preventive measures, and available treatment options. This article aims to provide an in-depth exploration of skin cancer, shedding light on its causes, types, preventive strategies, and advancements in treatment modalities. Skin cancer encompasses abnormal cell growth within the skin, primarily caused by prolonged exposure to Ultraviolet (UV) radiation from the sun or artificial sources such as tanning beds. The incidence of skin cancer has been increasing globally, making it one of the most common cancers diagnosed today. It poses a substantial health burden, but early detection and preventive measures can significantly reduce its impact. BCC is the most common type of skin cancer. It often appears as a pearly or waxy bump on the skin, frequently on sun-exposed areas like the face or neck. While it rarely spreads to other parts of the body, timely treatment is essential to prevent damage to surrounding tissues. SCC arises in the squamous cells of the skin's outermost layer. It typically manifests as a firm, red nodule or a scaly, crusty lesion. Although less common than BCC, SCC can metastasize if left untreated. Melanoma is a less prevalent but more aggressive form of skin cancer that originates in the pigment-producing cells (melanocytes). It often appears as an irregularly shaped mole or spot, and early detection is crucial as it can spread rapidly to other organs. Prolonged exposure to UV radiation, whether from the sun or tanning beds, is the primary risk factor for skin cancer. Intense or frequent sun exposure without adequate protection increases the risk significantly. Individuals with fair skin, light hair, and eyes are more susceptible to skin cancer due to reduced melanin, which of-

fers natural protection against UV damage. Genetic predisposition also plays a role. Occupational exposure to certain chemicals or radiation, a weakened immune system, and a history of sunburns or previous skin cancer diagnoses contribute to increased susceptibility. Adopting sun-safe practices, such as wearing protective clothing, using broad-spectrum sunscreen, seeking shade, and avoiding peak sun hours, significantly reduces the risk of skin cancer. Self-examination of the skin and routine visits to a dermatologist for skin assessments and early detection of suspicious lesions are critical preventive measures. Limiting indoor tanning, avoiding excessive sun exposure, and being vigilant about changes in the skin are important in preventing skin cancer. For localized skin cancers like BCC and SCC, surgical removal of the tumour is often the primary treatment, ensuring complete removal of cancerous cells. Mohs micrographic surgery involves removing thin layers of skin and examining them under a microscope immediately, allowing precise removal of cancerous tissue while preserving healthy skin. This treatment option is employed in cases where surgery may not be feasible, targeting specific areas to destroy cancer cells. These advanced treatments involve using medications to stimulate the immune system or target specific molecules in cancer cells, offering promising results in advanced or metastatic melanoma cases. While less commonly used, chemotherapy or photodynamic therapy may be recommended in certain instances to treat skin cancer.

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## CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

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