Photodynamic therapy (PDT)

PDT is an established procedure used by dermatologists to treat certain types of skin cancer as superficial Basal cell carcinoma, Bowen's disease and Solar keratosis. In selected patients it may obviate the need for surgery providing a convenient treatment. Cure rates are about 80-90%. For Basal Cell carcinoma and Bowen's two treatment 1-2 weeks apart are needed.

PDT is mediated by **oxygen-dependent photochemical reactions**. Upon absorption of photons of light, the photosensitizer is excited to a short-lived singlet state followed by a transition to the reactive triplet state. From its triplet state in the presence of oxygen, reactive free radicals and singlet oxygen species ensue. These, in turn, react with cell membranes, causing direct damage to the mitochondria, endoplasmic reticulum, and/or plasma membranes.

Photosensitising agents are chemicals such as Methyl aminolevulinic acid (Metvix) and aminolevulinic acid. When applied to the skin they concentrate in precancerous or cancer cells in about 3hrs. When red light is applied on the treated area for approximately 8 minutes.A photodynamic reaction occurs between the photosensitising chemical, light and oxygen which kills the cancer cells.

During the treatment there maybe a burning or stinging sensation which maybe controlled with cold water sprays and sometimes local anaesthesia or nerve blocks. Goggles maybe worn to relieve the eyes from the bright light. Side effects after treatment include swelling and redness, crusting, itching, peeling and blisters, and skin infections. Steroid creams maybe applied for 1-5 days to settle the inflammation. The skin is sensitive to light for about 24 hrs and needs to be protected from sunlight and bright fluorescent lights. The sunburn like reaction may take 4-8 weeks to fully settle; rarely there maybe a mild scar and possibly some change in skin colour.

www.bad.org.uk
www.dermnetnz.org