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PHOTODYNAMIC THERAPY FOR ACNE

Photodynamic therapy is used to treat acne, and also to treat actinic keratoses and certain skin cancers. (For PDT for [actinic keratoses](#) and [skin cancers](#), see <https://somalaser.com/photodynamic-therapy-for-actinic-keratoses-and-skin-cancer/>)

Photodynamic Therapy For Acne

Photodynamic therapy (PDT) is often used to treat acne. [Blue light](#) alone is also used to treat acne.

In the photodynamic therapy procedure for acne, a medication, either Levulan or Ameluz, is applied to the face. It is usually left on, or incubated, for 90 minutes. The medication accumulates in sebaceous glands and the epidermis, as well as in P. acnes bacteria, allowing PDT to target acne. The use of PDT for acne is off-label but widely used by dermatologists. After incubating on the skin, the Levulan or Ameluz is activated with a light source. At SOMA Skin & Laser we use the Vbeam pulsed Dye Laser or the Blu-U blue light. The resulting decrease in sebaceous gland activity and P. acnes bacteria can lead to significant acne improvement.

Light Sources For PDT

The light used must be at a wavelength near a peak of porphyrin absorption in tissue. The Soret band at 405-420 nm is the key peak of protoporphyrin IX absorption. This wavelength is included in the output of the Blu-U or ClearLight devices used to activate ALA. However, there is also a red peak at around 635 nm, which can be targeted by other light sources, especially the Pulsed Dye Laser, with an output at 595 nm. A different sensitizer, Metvix, is used with red light (570-670 nm). The official wavelength for Ameluz is also red light, and their studies were done with the BF-RhodoLED light. In some protocols, called Daylight PDT, a sensitizer can be activated with sunlight.

Photodynamic Therapy For Photoaging

PDT is also used to treat photoaging, and is a popular procedure for rejuvenation. The exact mechanism of photodynamic therapy for rejuvenation is not certain, but stimulation of collagen deposition is thought to be important. There is also superficial peeling of photodamage. Photodynamic therapy for the treatment of photoaging is one of the most sought after and popular cosmetic procedures.

Photodynamic Therapy For Skin Cancer And Precancers

Cancer cells accumulate more Levulan or Ameluz than normal cells, allowing photodynamic therapy for the treatment of actinic keratoses, Bowen's disease, and basal cell carcinoma. Treatment of actinic keratoses is the only FDA-approved indication for Levulan. In most patients, a brisk phototoxic reaction occurs with erythema, edema, crusting, and erosion. This is considered necessary to clear these lesions. (For PDT for [actinic keratoses](#) and [skin cancers](#), see <https://somalaser.com/photodynamic-therapy-for-actinic-keratoses-and-skin-cancer/>)

How Does PDT Work?

Following light activation, porphyrins are excited to a higher energy state, which can result in generation of reactive oxygen species, such as singlet oxygen or free radicals. For the treatment of acne, preferential accumulation of Levulan in sebaceous glands as well as reduction in Propionibacterium acnes, the bacteria implicated in acne, is thought to be the responsible mechanisms. For treatment of photoaging, increased collagen synthesis following photodynamic therapy may play a role. For the treatment of pre-cancers, Porphyrins from Levulan are concentrated near mitochondria, leading to cell death of malignant or pre-malignant cells upon light exposure.

Is Photodynamic Therapy Covered By Insurance?

The use of photodynamic therapy for the treatment of skin cancers and pre-cancers is often covered by insurance. Photodynamic therapy for acne or rejuvenation is not reimbursed by insurance.

How Much Does Photodynamic Therapy Cost?

For acne or rejuvenation photodynamic therapy, consult with your SOMA Skin & Laser dermatologist for current pricing.

During And After Photodynamic Therapy

During photodynamic therapy you may feel a burning or stinging sensation. We often use a fan or gentle misting of liquid nitrogen during the procedure. After the PDT procedure, you must entirely avoid the sun for several days, as severe reactions are possible since there is still photosensitizer on the skin. Erythema (redness) and edema (swelling) often occur, followed by peeling. There can be a burning sensation, pain, crusting, and blister formation. Hyperpigmentation is sometimes seen after PDT, usually resolving over several months. Hypopigmentation has also been reported.

- [Levulan Patient Education Video \(for Acne/Keratosis\)](#)
- [DUSA Pharmaceuticals Website \(maker of Levulan Kerastick\)](#)
- [Ameluz website](#)

**Results may vary patient to patient. There is no guarantee that any specific result can be achieved.



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