

# Photodynamic therapy of acne vulgaris.

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## Abstract

Photodynamic therapy (PDT) with topical 5-aminolevulinic acid (ALA) was tested for the treatment of acne vulgaris. Patients with acne were treated with ALA plus red light. Ten percent water solution of ALA was applied with 1,5-2 h occlusion and then 18-45 J/cm<sup>2</sup> 630 nm light was given. Bacterial endogenous porphyrins fluorescence also was used for acne therapy. Treatment control and diagnostics was realized by fluorescence spectra and fluorescence image. Light sources and diagnostic systems were used: semiconductor laser ( $\lambda=630$  nm,  $P_{\max}=1$ W), (LPhT-630-01-BIOSPEC); LED system for PDT and diagnostics with fluorescent imager ( $\lambda=635$  nm,  $P=2$ W,  $p=50$  mW/cm<sup>2</sup>), (UFPH-630-01-BIOSPEC); high sensitivity CCD video camera with narrow-band wavelength filter (central wavelength 630 nm); laser electronic spectrum analyzer for fluorescent diagnostics and photodynamic therapy monitoring (LESA-01-BIOSPEC). Protoporphyrin IX (PP IX) and endogenous porphyrins concentrations were measured by fluorescence at wavelength, correspondingly, 700 nm and 650 nm. It was shown that topical ALA is converted into PP IX in hair follicles, sebaceous glands and acne scars. The amount of resulting PP IX is sufficient for effective PDT. There was good clinical response and considerable clearance of acne lesion. ALA-PDT also had good cosmetic effect in treatment acne scars. PDT with ALA and red light assist in opening clogged pores, destroying Propionibacterium acnes and decreasing sebum secretion. PDT treatment associated with several adverse effects: oedema and/or erythema for 3-5 days after

PDT, epidermal exfoliation from 5<sup>th</sup> to 10<sup>th</sup> day and slight pigmentation during 1 month after PDT. ALA-PDT is effective for acne and can be used despite several side effects.

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## Topics

Photodynamic therapy ; Diagnostics ; Luminescence ; Cameras ; Imaging systems ; Lasers ; Light emitting diodes ; Light sources ; Semiconductor lasers ; Spectrum analysis

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