

## Standardization of a new photodiagnosis method based on LEDs for patients with solar urticaria

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### Abstract

Standard methods for photodiagnosis of solar urticaria are based in exposure of patient skin to different polychromatic UV and visible sources where minimal urticarial doses for different spectral bands (UVB and UVA) are established. Classical photodiagnosis devices are based in solar simulation and use of UVB and UVA enhanced fluorescent lamps. In case of visible US photodiagnosis, US patient skin is exposed for 15 min to a slight projector, provided with halogen lamp, at a distance of 15 cms and presence of erythema and/or wheals is determined as positive reaction. Slight projector is from several years almost out of market due to use of new projection digital technologies and new visible light emerging technologies are good candidates for their substitution as photodiagnosis tool. The objective of the present work is to analyze photodiagnosis of visible light solar urticaria with using a LED device in comparison to normal slight projector exposure protocol.

A total of 30patients, from 8 different photodiagnosis units have participated in the study. Patients, with SU positive to visible light (with or without to UV radiation) following the standard photodiagnosis protocols were included in the study. Slight projector used in all photodiagnosis units were of similar characteristics and irradiance at 15 cm distance, as well as total dose of visible light after 15 min were calculated for each halogen lamp device. LED exposure was performed in parallel in a closed zone of the back of the patients. For LED

photodiagnosis a prototype from University of Málaga (Spain) has been developed consisting in a black box provided with 4 holes of 12 mm diameter in which each hole white warm of a LED of 1 W is emitted. Thus, each LEDs dose is controlled independently and the device allows establishing, as well as for UVB and UVA normal protocols a MUD also under visible light. In that case, maximal visible light dose is reached in less than 5 min compared to 15 min under exposure to slight projector.

All patients were positive to LED warm visible light with presence of erythema and / or wheals in parallel to the exposure to the slight projector. A MUD to visible light has been established with significant variations between patients which reveals different grade to visible light sensibilization. In conclusion, a new technology of illumination based in LEDs can be used in photodiagnosis of SU.