

The treatment of localized Vitiligo and Hypopigmented skin with the MultiClear™ - a computerized tunable UVB/UVA targeted high intensity light system

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Introduction

It is known that normal skin can be exposed to up to 3 MEDs without blistering . A therapy targeted only to vitiligo or other hypopigmented areas spares the “healthy” skin from UV and may employ higher fluences and may shorten time to clearance.

The MultiClear™ is a novel tunable multiwavelength medical device which selectively targets a multitude of skin conditions. It emits high intensity incoherent light which is tunable to a few optimal narrow band emission spectra in the UVA and UVB range. It can also simultaneously emit a blend of UVA and UVB treatment light. Optimal treatment parameters are selected through a fully computerized built in expert system thereby enabling very fast and easy operation (figure 1.).

This high intensity novel device may selectively expose hypopigmented skin to high narrow band fluences while totally sparing the non lesional skin. Basic setup provides a spot size as large as 23X23 mm. Computerized controls allows exposures of up to 7 MEDs in both continuous or pulses mode. UVB emission peak at 304-313 nm is optimized to fit best efficacy/erythema treatment ratio .

Materials and Methods:

The MultiClear™ (Curelight Ltd.) which was utilized in our study operated with an enhanced metal halide lamp mixture. A specially designed light concentrator focuses the light on a liquid optical fiber allowing a homogenous effective treatment spot size of 22X22mm. A bi - weekly UVB or UVB blended with UVA radiation was given to selected vitiligo lesions for a maximum of 6-10 treatments. Initial doses were 350 mJ/cm² in the UVB and 1300 mJ/cm² in the UVA . Time duration was less than 4 seconds on each spot. We gradually lowered the dose. Improvement was assessed on a visual scale via serial photographs.

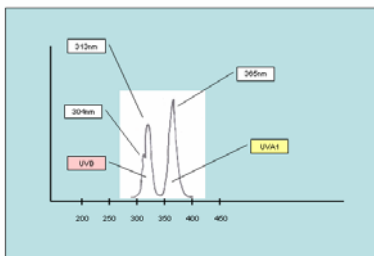


Figure 1: Optical Spectrum of the tunable MultiClear™ treatment station. (Emission in the UVB range with peaks in the 304nm and 313nm and emission in the UVA1 band (peak 365nm) . Both a single or both bands were used simultaneously .

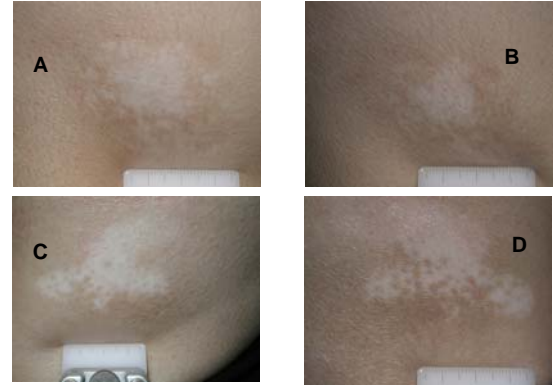


Figure 2. A. Neck, before therapy;. B. Same site after 4 treatments. C. Hips, before therapy; D. After 4 treatments. (Treatment parameters: 250 mJ/cm² UVB and 1300 mJ/cm² UVA. per exposure)

Clinical results and Discussion:

An initial study included 15 patients . Treated sites included a large number of affected area such as hands, legs, neck, faces. . A weekly UVB or mostly UVB blended with UVA radiation was given to selected vitiligo lesions for a maximum of 5-10 treatments. Eighty percent of the patients responded very well to the treatment with minimal side effects. In responding patients, clearance was mostly noted after an average of 4-5 treatment sessions , depending on site. Lengths of a full treatment session/per patient was 5-10 minutes

Conclusions:

The tunable MultiClear multiwavelength targeted phototherapy system tested in the current study allows high intensity optimized UVB or blended UVB and UVA therapy of vitiligo and hypopigmented skin over a large 23X23mm spot size. Our data shows high response rate with UVB and UVB/UVA blend , depending on lesion site . The MultiClear targeted phototherapy provides major advantages to other available full body UVB or UVA modalities. MultiClear targeted phototherapy totally spares non involved skin from UV - thus providing a superior safety profile. The faster results achieved with the MultiClear is attributed to its optimized UVB wavelength and the blend with the strong anti inflammatory UVA band. UVB and UVA induce pigmentation by different mechanisms. The use of tailored combinations of UVB and UVA1 in the MultiClear offers a clear advantage over UVB only sources and is possibly the ideal repigmentation tool . The expert system of the MultiClear considerably simplifies the use of the MultiClear and shortens total treatment time.