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UV-Fit – INCREASING METABOLIC FITNESS AND REDUCING BODY WEIGHT WITHOUT FASTING

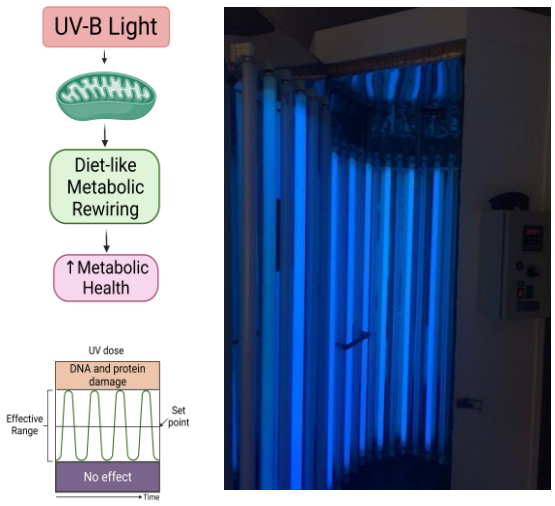
Keywords: phototherapy, metabolic fitness, metabolic syndrome, aging, adipositas, obesity, fatty liver, narrow-band UV-B radiation

INVENTION NOVELTY

The invention encompasses diet-like metabolic remodeling through short-term whole-body exposure to narrow-band UV-B light for the treatment of diseases such as metabolic syndrome, obesity, fatty liver, as well as for weight reduction without fasting.

VALUE PROPOSITION

Impairments of metabolic health during aging and disease strongly contribute to reduced individual quality of life as well as to an increasing global burden of healthcare costs. Standard interventions for the treatment of metabolic syndrome, obesity, fatty liver and related metabolic impairments usually include calorie restriction diets implicating a compliance challenge for many patients. Thus, alternative safe, effective and easy to comply with treatments are needed enabling the longevity promoting and health enhancing benefits of calorie restriction without need of fasting.



Metabolic remodeling by UV-B treatment requires individual dose and duration adjustement. [source picture UV lamp: wikimedia commons]

TECHNOLOGY DESCRIPTION

The inventors demonstrated in an *in vivo* animal model that short-term exposure to UV-B radiation in the range of 305-315 nm leads to metabolic remodeling, which is identical to effects of calorie restriction. The changes were dose dependent and can be monitored by a series of physiological markers such as lipid catabolism. This allows personalized treatment by applying a fine-tuned dose calibration procedure, which is based on the patient´s skin type and well-established blood tests for specific markers, facilitating the adjustment of the method for each individual patient on a “maximal benefit – no harm” basis. Phototherapy with UV-B-radiation is a widely used and safe treatment for skin diseases, such as psoriasis, acne vulgaris and eczema, which can be carried out in a clinic or even at home by means of already established UV-B home systems. Beside the positive effects on skin diseases, studies have already proven the benefits of UV-B-radiation for the systemic homeostasis and the synthesis of vitamin D. The invention demonstrates that, due to its newly discovered metabolic remodeling properties, specially calibrated narrow-band (305-315 nm) UV-B phototherapy can also be used for the treatment of diseases such as metabolic syndrome, obesity, fatty liver, as well as for fitness purposes and cosmetic weight reduction without fasting.

COMMERCIAL OPPORTUNITY

The technology addresses the markets of phototherapeutic instrumentation and wellness care, and is offered for co-development and/or licensing

DEVELOPMENT STATUS

The data were obtained *in vivo* in *Caenorhabditis elegans* and translation to humans was shown in primary human skin cells. A recent study in mice confirmed the validity of the UV Fit approach *in vivo* in mammals.

PATENT SITUATION

Priority was filed in December 2021, an international PCT-application is pending (WO2023111264).

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