

## A prospective multi-centred clinical study of photorejuvenation in Asian skin using 2790 nm infrared laser

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**Introduction:** This was a prospective multi-centred clinical study to evaluate the safety and efficacy of the 2790 nm Er:YSGG laser for resurfacing in Asians.

**Methods:** A total of 41 Asian subjects with Fitzpatrick skin types III-V and moderate-to-severe photodamage were recruited. Two full facial treatments were performed at 4-week intervals. A 2790 nm  $\mu\text{m}$  laser was used with settings of 2.0 J/cm<sup>2</sup> fluence, 0.4 ms pulse duration, single pass and 20% overlap. Standardised photographs were taken at baseline, 1 and 3 months after the second treatment. Two blinded assessors evaluated the photographs to assess the degree of improvement in fine lines, skin texture, irregular pigmentation, pigment spots, pore size and telangiectasia on a scale of 0 (no improvement) to 4 (excellent improvement). Patient satisfaction scores were also obtained. Cutometry was performed at five standard anatomical points on each visit.

**Results:** All subjects tolerated the procedure well using topical anaesthesia. Erythema and desquamation occurs after a mean of 3.4 and 6.7 days, respectively. Objective evaluation documented statistically significant improvement in terms of irregular pigmentation, pore size, and telangiectasia ( $P < 0.05$ ). 90.2% of subjects reported moderate-to-excellent overall improvement. Cutometry showed statistically significant improvement in skin elasticity at all points. There were two cases of mild post-inflammatory hyperpigmentation (4.9%), and one case of herpes simplex infection.

**Conclusion:** The 2790 nm Er:YSGG laser appears to be safe and effective for photorejuvenation in Asians with minimal adverse sequelae. However, further studies are necessary to optimise treatment parameters.

## Inactivation of hypoxia inducible factor (HIF) 1 alpha induces obesity-associated metabolic disorders through brown adipose tissue dysfunction

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**Introduction:** Obesity is the major risk factor for a cluster of metabolic and cardiovascular diseases. Although the molecular events that link obesity with its related disorders remain poorly understood, growing evidence suggests that inflammation might be a key 'culprit'. Adipose tissue is now recognised to be one of the major contributors of systemic inflammation observed in obese states. Recent studies have demonstrated that relative hypoxia may contribute to obesity-induced inflammation, insulin resistance and other metabolic and cardiovascular disorders by activating hypoxia inducible factor 1 alpha (HIF 1 alpha), a transcription factor critically involved in the regulation of inflammation. However, the role of HIF 1 alpha in adipose tissues is still unclear. This study investigated the role of HIF 1 alpha in obesity-induced metabolic disorders in adipose tissues.

**Methods:** Transgenic mice with adipose tissue-specific over-expression of dominant negative (DN) HIF 1 alpha were generated. Their phenotypic changes under high fat diet were comprehensively characterised. Adipose tissues, liver, muscle and serum were collected for further biochemical and morphological analysis.

**Results:** Adipose tissue-selective inactivation of HIF 1 alpha mice developed more severe obesity compared to their littermate control, and exhibited hyperglycaemia and hyperinsulinaemia, causing the impairment of glucose tolerance and insulin sensitivity. Histological analysis showed that brown adipose tissue disappeared in the transgenic mice, leading to decreased energy dissipation. Real-time PCR demonstrated that the expression of gene encoding mitochondria proteins was decreased in the transgenic mice, which was accompanied by decreased copy number and protein content of mitochondria.

**Conclusions:** Adipose tissue selective inactivation of HIF 1 alpha accelerates obesity development by increasing fat mass, possibly through the mitochondrial dysfunction in brown adipose tissue.

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