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Letter to the Editor

Potential advantages of simvastatin as a novel anti-vitiligo arsenal

Dear Editor,

Vitiligo is an acquired depigmentary disorder characterized by the loss of functioning epidermal melanocytes[1]. Although there have been several advances in the management of vitiligo, however, major challenges remain in further potent medications used to treat this disease[2]. Herein the Author would like to describe some chemical properties of simvastatin (an anti atherosclerotic agent)[3] in order to encourage research on the use of this agent in the treatment of Vitiligo.

It has been shown that simvastatin has a anti inflammatory properties[4] and protective effect against oxidative damage by scavenging the free radicals generation and restoring the enzymatic and nonenzymatic antioxidant systems[5]. Notably, it protected osteoblast against H_2O_2-induced oxidative damage[6], and diminishes NF-kappa B activation elicited by oxidative stress[7]. Additionally, statins, specially simvastatin, are effective immunomodulators *in vitro* and modifie T helper 1/T helper 2 cytokine balance[8] and significantly diminish Th1/Th2 and CD4/CD8 ratios[9].

Vitiligo is associated with overproduction of proinflammatory cytokines such as TNF-α[10] IL-6, and IL-2 which may play an important role in melanocytic cytotoxicity[11]. In contrary, serum levels of TGF-β (transforming growth factor-beta), an important immunoregulatory cytokine produced by T regulatory cells, has been reported significantly decreased in serum of patients with vitiligo[10]. It is noteworthy that simvastatin has a wide range of immunomodulatory properties such as production of the immune regulatory markers IL-10, TGF-beta[12] and decrease of TNF-alpha[13], IL-6, and IL-2 production[14,15].

It has been suggested that PGE2 enhances melanogenesis by different ways and a major part of UVA therapeutic efficacy against vitiligo was exerted by production of PGE2[16]. Moreover, CAMP stimulates, melanogenesis and melanocytic stem cell proliferation and also CAMP enhances the activity of glucose-6-phosphate dehydrogenases, an important antioxidant enzyme whose level is decreased in vitiligo[17].

It has been shown that simvastatin increased CAMP levels[18] and its gastroprotective effect is mediated by scavenging free radicals, increasing nitric oxide and PGE2 levels[19].

In sum, given the important role of oxidative stress H_2O_2, nitric oxide, IL-6, dominant Th1 cytokines such as TNF-alpha and Il-2 involved in the pathophysiology of vitiligo and the anti-free radical and immunomodulatory effects of simvastatin and also the potential melanocyte stimulatory effect of this agent it could be a useful addition to the limited anti vitiligo ammunition. As a support Noël et al[20] in 2004 described an unusual case of regression of vitiligo in a patient treated with high dose simvastatin[20]. However, until now there is no documented clinical trial for approving of this interesting observation. Combining this agent with the other anti vitiligo armamentarium potentiates them. Our commentary suggests conduction of the clinical trial on the subject.

Conflict of Interest

The Authors declare that they have no conflict of interests.

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