



## Evaluation of Vitamin D in Melasma Patients

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### To the editor,

Vitamin D deficiency is incredibly common and affects not only bone metabolism, but also muscle and the immune system function. Other ways vitamin D is thought to help us is an area of active research and controversy: there have been many preliminary or under debate studies to suggest that it might prevent cancer and treat diabetes, heart disease or multiple sclerosis. Recent studies published in Romanian Journal of Laboratory Medicine revealed that vitamin D receptor gene polymorphism ApaI (rs7975232) might be associated with multiple sclerosis (1) and the association of lower 25(OH)D levels with mortality in hemodialysis patients (2). We emphasize a possible relation between vitamin D serum level and melasma in our patients. The facial hyperpigmentation or melasma is derived from the Greek word *melas*, which means black; also, it may be called as “Chloasma Gravidarum” or “the mask of pregnancy”. In 45-75% of pregnancies, its onset usually occurs during the second term of gestational period (3). Brown-eyed, dark-haired, dark-complexion women are more commonly affected. Previous different studies reported major differences in melasma incidence due to the pigmentary changes that are mainly associated with fair-skinned persons (4,5). Chronically sun-exposed skin areas, like face and neck, are usually the most common sites affected by melasma, especially on the forehead, temples, cheeks, chin, upper lip, or nose; while the sternal area and extensor arms are more rarely involved (6,7). However; melasma has been regarded as a benign disease, since it only has

an aesthetic effect that may influence the self-esteem and self-image with negative feedback on patient's life quality (8). Although the exact cause of melasma has not been yet confirmed, multiple factors might be involved including genetics, sun-exposure, pregnancy, thyroid dysfunction, oral contraceptives, antiepileptic drugs, and cosmetics (9,10).

In a cross-sectional study we aimed to evaluate the Vitamin D serum level in melasma patients and compare it with healthy control individuals at Salah-Al Deen governorate. The study was conducted on the outpatients who attended the Dermatology and Venereology Consulting Clinic of Salah-Al Deen General Hospital during the period extending from November 2017 to April 2018. The total number of subjects included in the study was 90 individuals; 45 melasma patients and a healthy control group of 45 individuals. Ethical agreement statement was obtained from all subjects, according to the World Medical Association Declaration of Helsinki, revised in 2000, Edinburgh. Population age ranged between 20-45 years. Patients and controls had serum assay of Vitamin D by Human Vitamin D ELISA Kit (Sunlong Biotech Company).

The mean Vitamin D serum level in melasma patients and controls was  $11.32 \pm 5.08$  ng/ml and  $19.86 \pm 2.09$  ng/ml, respectively (which ranged 6.0-20.8 ng/ml and 14.8-28.7 ng/ml, respectively). A significant difference ( $p \leq 0.01$ ) of Vitamin D level was found between melasma patients and controls. On the other hand, Vitamin D level in male melasma patients and male controls was  $16.83 \pm 3.30$  ng/ml and  $20.63 \pm 3.48$  ng/ml, respectively which ranged 10.4-20.8 ng/ml and 14.8-28.7 ng/ml (Table 1).

These findings reported a significant difference ( $p \leq 0.05$ ) of Vitamin D level between male

**Table 1. Level of Vitamin D in melasma patients compared to controls.**

		<b>Melasma Patients</b>		<b>Control Group</b>	
		Male	Female	Male	Female
Number of subjects		20	25	20	25
Age (years)		30.75±8.78	32.11±5.62	30.0±6.43	30.46±7.97
Vit. D (ng/ml)	Mean ± SD	16.83±3.30*	7.64±1.11**	20.63±3.48	18.59±2.86
	Range	10.4-20.8	6.0-10.6	14.8-28.7	14.0-24.5

\*p<0.05; \*\*p<0.01

melasma patients and male controls. The mean of Vitamin D level in female melasma patients and female controls was 7.64±1.11 ng/ml and 18.59±2.86 ng/ml, respectively; which ranged 6.0-10.6 ng/ml and 14.0-24.5 ng/ml; with a mean age of 32.11±5.62 years and 30.46±7.97 years, respectively as presented in Table (2). These results revealed a highly significant difference ( $p \leq 0.01$ ) of Vitamin D level between female melasma patients and female controls. In this study, a highly significant difference ( $p \leq 0.01$ ) of Vitamin D level could be revealed between male and female melasma patients, while there was no significant difference ( $p \geq 0.05$ ) of Vitamin D level between male and female controls.

The findings of the this study showed that there was a highly significant difference ( $p \leq 0.01$ ) in Vitamin D level between melasma patients and controls; and also between female melasma patients and female controls; and even between male and female melasma patients. There was a significant difference ( $p \leq 0.05$ ) between male melasma patients and male controls; but there was no difference of Vitamin D level between male and female controls.

Previous studies in various ethnic groups reported darker skin types like Africans or Asians usually with low Vitamin D levels (11-14), in which melanin of darker skin people might limit the UV radiation penetration and leads to less formation of Vitamin D. These studies confirm the effect of UV radiation in producing adequate amounts of Vitamin D in different temperate climates; also

a negative relationship found between sunburn numbers and Vitamin D level confirms that Vitamin D deficiency mainly occurs in sun sensitive persons (mostly skin type I and II). Another study done by Holick et al (15) stated that individuals with darker skin require at least 10 times more sunlight exposure than individuals with lighter skin to yield the exact Vitamin D amount in their skin. There have been no previous studies available reporting on plasma Vitamin D level in melasma patients. In our study, Vitamin D level in melasma patients was lower than control in male and female subjects; therefore, it may be important to recommend Vitamin D as a supplement in melasma treatment, especially in women.

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## Authors' contribution

Mohammad Ahmad Abdalla, Ph.D (Conceptualization; Data curation; Resources)

Mohammad Shahatha Nayaf (Project administration; Software; Writing – original draft)

Sura Zahim Hussein (Investigation; Supervision; Visualization; Writing – review & editing)

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