

SERUM COPPER LEVELS IN VITILIGO

By

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Introduction : Melanin formation depends on the status of the enzyme tyrosinase. This enzyme contains about 0.2% of copper and is synthesized by the ribosomal fractions of melanocytes. Formation of tyrosinase depends on the amount of copper received by the melanocytes from the blood. As such it is of interest to investigate whether vitiligo cases show any deviation of their serum copper content from normal persons. Behl et al. (1961) reported significantly low serum copper levels in vitiligo cases. El Mofty et al. (1961) and Kandhari and Sobhanadri (1963) reported a tendency for low serum copper levels without statistical significance in this disease. In the present communication we report our observations on serum copper levels in vitiligo cases and normal persons.

Material and Methods : Serum copper was estimated in 20 normal persons without evidence of vitiligo and 30 cases of vitiligo. Age of normal persons varied from 15 to 50 years and that of vitiligo patients from 10 to 60 years. Normal persons consisted of 14 males and 6 females while there were 22 males and 8 females amongst vitiligo patients.

The method of Gubler et al. (1952) was employed for the determination of serum copper. The readings were taken at 490 millimicrons in Biochem Absorptiometer. The determinations of serum copper were carried out on the day of collection of the samples.

Results: The serum copper levels in vitiligo patients were lower than those in normal persons; but the difference is found to be not significant statistically (Table I).

TABLE I

Statistical analysis of serum copper levels in normals and vitiligo patients.

	Mean serum copper in micrograms per cent	Standard deviation	Value of P.
Normal persons (20)	126.75	27.07	} 0.10
Vitiligo patients (30)	121.70	29.24	

Discussion : In our investigation mean serum copper level in normal persons is higher than that reported by other Indian authors, but lower than the value obtained by El Mofty et al. (1961) (Table II).

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Received for Publication on 11-9-1969.

TABLE II

Serum copper levels in normal persons reported by different authors.

	Year	Mean serum copper level in micrograms per cent.
Behl et al	1961	106.000
El Mofty et.al	1961	151.000
Chitre et al	1962	120.000
Kandhari & Sobhanadri	1963	123.415
Chitre & Balasubramanyan	1969	121.000
Present Study	1969	126.750

Our vitiligo patients showed a mean serum copper level lower than that in our normal persons but the difference has been observed to be not significant statistically. The finding agrees with the reports of El Mofty et al (1961) and Kandhari and Sobhanadri (1963). Behl et al. (1961) reported significantly low levels of serum copper in their vitiligo cases as compared to the normal persons (Table III).

TABLE III

Serum copper levels in vitiligo patients reported by various authors.

Author	Year	Mean serum copper in micrograms percent	Difference from normal persons
Behl et al.	1961	69.0	Significant
El Mofty et al.	1961	..	Not significant
Kandhari & Sobhanadri	1963	115.0	Not significant
Present Study	1969	121.7	Not significant

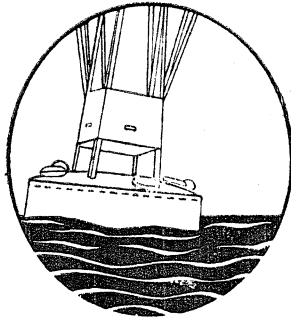
Various studies of serum copper levels have either shown tendency to low levels or significantly low levels. On the other hand Ghoshal (1969) reported significantly high levels of serum caeruloplasmin in vitiligo patients as compared to normal persons. As about 95% of copper in serum is present as caeruloplasmin, it appears that levels of serum copper other than present as caeruloplasmin may be significantly low in cases of vitiligo. Studies in this direction are being carried out by us.

Summary: Serum copper levels were determined in 20 normal persons and 30 vitiligo patients by the method of Gubler et al. (1952). The levels in vitiligo patients (126.75 ± 27.07 micrograms%) were lower than in normal persons (121.70 ± 29.24 micrograms%). The difference is found to be not significant statistically. However, it is suggested that levels of serum copper other than that present as caeruloplasmin may be significantly low in vitiligo patients.

Acknowledgements: We are thankful to the principal of our institute for permission to publish this report. Also we are highly thankful to the professor of biochemistry of the institute for his guidance.

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