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Effect of Vitamin A and Vitamin C on Physiological Parameters of Males in Age Group 18 To 25 Years

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Abstract

Aim: Effect of Vitamin A and Vitamin C on Physiological Parameters of Males in Age Group 18 To 25 Years. **Method:** 50 vitamin deficient males in the age group 18 to 25 years of age group were studied. The subjects were given recommended dose of the vitamins in the form of carrots and tomatoes daily and their physiological status was observed in terms of the following parameters: BMI, Blood Pressure, Weight and Hemoglobin over a period of forty days. **Results:** There was no significant change in BMI, Blood Pressure and weight after supplementation of vitamins. Vitamin supplementation however, increased significantly the hemoglobin content in these individuals. **Conclusion:** it was conclude that vitamin A and Vitamin C have no effect on BMI, Blood Pressure and weight but there is an increase in hemoglobin.

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Introduction

Vitamins are derived from food and are essential to keep the body healthy and the mind alert. Although they do not provide energy or make up our cells or organs, without them the body cannot carry out many of the chemical processes it needs. Vitamins interact with other nutrients in processes such as metabolism, digestion and developing blood cells and some vitamins are said to slow down the ageing process, prevent cancerous cells attacking the body and strengthen the immune system. Recommended Dietary Allowance (RDA) for Vitamin C is 45-60 mg per day for men above 18 years of age and RDA for vitamin A is 5000IU (http://www.anyvitamins.com/rda.htm). RDA for Vitamin A is Carrots (100 g) consists (334% of RDA) of Vitamin A and 10% of RDA for Vitamin C. (http://www.healthaliciousness.com/nutritionfacts/nutritioncomparison.php?o=11124&t=11124&h=11960&s=100&e=61.00&r=15). 100 g of tomatoes contain 210% of RDA for vitamin C .In a cross sectional study of children in northeast Thailand, serum retinol was found to be positively associated with serum iron and ferritin as reported by Bloem et. al (1989). Other studies have found a significant correlation between serum retinol and hemoglobin concentration by Mejia et. al (1977). Among Indian preschool children, hemoglobin values were found to be lower in those who had serum retinol below 20µg/dL compared with those with normal levels as reported by Mohanram in (1977). Vitamin A and Vitamin C supplementation of deficient children resulted in a significant increase in hemoglobin, hematocrit, and serum iron. The present study involves the role of β-carotene source of Vitamin A and lycopene source of Vitamin C on physiological parameters of males in the age group (18-25 years), students of Bhojia Institute of Life Sciences.

Materials and Methods

The fifty (n= 50) male students (18-25 years of age)studying in Bhojia Institute of Life Sciences ,situated at Bhud, Baddi, Himachal Pradesh, who were residing as paying guests in the neighbouring area were selected for the study. Their diet was evaluated by a three day recall method with the help of a questionnaire. These students were found to be deficient in their daily intake of Vitamin A and Vitamin C less than the recommended value as calculated by Dine software.The students were examined physiologically for the following parameters before treatment. These students were given 30 g of carrots and 50 g of tomatoes everyday and then their following physiological parameters were determined after every 10 days interval for 40 days.

1.Basal Mass Index (BMI): The height was measured by an anthropometric rod in m. The weight was determined in kgs by weighing machine. BMI was calculated as follows: BMI=weight/$(height)^2$

2.Blood Pressure (B.P.): B.P. was measured by syphgmanometer in mm Hg of mercury by standardized method (Godkar2003).

3.Hemoglobin: Blood was taken by needle prick and hemoglobin was determined by Sahli's hemometer (Godkar2003).

The data was analyzed statistically by SPSS for Windows (version 11.5). Statistical methods used were ANOVA. $P<0.05$ was considered significant.

Results and Discussion

The mean BMI of the boys at the start of the experiment was 22.6 ± 4.1, after ten days BMI of the boys was 22.3 ± 3.8, after 20 days of administration BMI was 21.7 ± 3.9, similarly after 30 and 40 days of supplementation it was 22.0 ± 3.7 and 21.6 ± 3.6; means no significant change in BMI was observed. The mean Systolic Blood Pressure of the boys at the start of the experiment was 128.7 ± 15.6, after ten days Systolic Blood Pressure of the boys was 127.0 ± 13.8, after 20 days of administration Systolic Blood Pressure was 123.0 ± 3.9, similarly after 30 and 40 days of supplementation Systolic Blood Pressure was 120.9 ± 2.3 and 121.9 ± 1.5; means no significant change in Systolic Blood Pressure was observed. The mean Diastolic Blood Pressure of the boys at the start of the experiment was 83.4 ± 13.8, after ten days Diastolic Blood Pressure of the boys was 87.9 ± 7.8, after 20 days of administration Diastolic Blood Pressure was 85.6 ± 3.1, similarly after 30 and 40 days of supplementation Diastolic Blood Pressure was 83.4 ± 1.5 and 82.4 ± 2.3; means no significant change in Diastolic Blood Pressure was observed. The mean Haemoglobin of the boys at the start of the experiment was 13.8 ± 0.7, after ten days Haemoglobin of the boys was 14.3 ± 0.6, after 20 days of administration Systolic Blood Pressure was 123.0 ± 3.9, similarly after 30 and 40 days of supplementation Haemoglobin was 15.0 ± 0.7 and 15.2 ± 0.7; means significant change in Haemoglobin was observed. There was no significant change in BMI, Diastolic, Systolic blood pressure and weight but there was a significant increase in hemoglobin in 40 days of supplementation of Vitamin A and Vitamin C . Similar results were observed in the research carried by Ardekani and Ardekani(2007) on giving the supplementation of Vitamin C. Vitamin A supplementation did not have any effect on weight Oji et.al(2001).

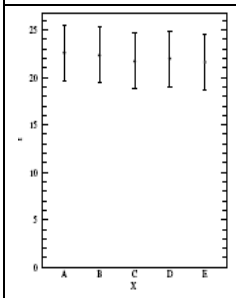
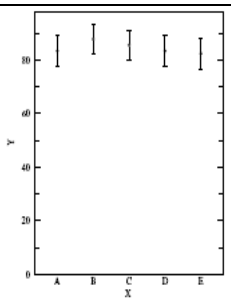
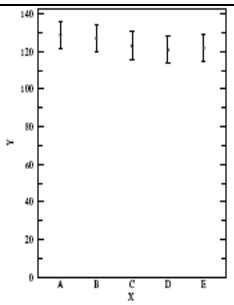
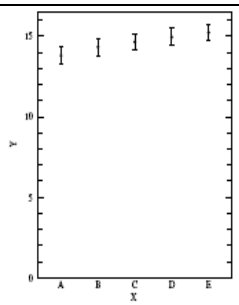
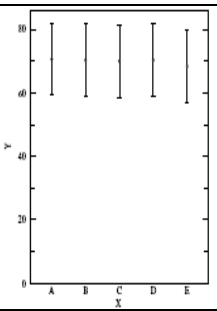
Conclusion

From the above discussions we conclude that vitamin A and Vitamin C have no effect on BMI, Blood Pressure and weight but there is an increase in hemoglobin. The ability of vitamin C to support Hb production can be linked to effects of vitamin C on the metabolism of iron. The restriction of iron delivery from the tissues for erythropoiesis has been documented as a common feature of patients with renal disease and is frequently manifested as hypochromic reticulocytes or hypochromic red blood cells as reported by Brugnara in 1998. Smith et. al in (1980) were of the opinion that Vitamin C could improve red cell production by mobilizing storage iron, including especially that portion of tissue iron that accumulates as hemosid-erin. My results justify investigation of the relation between vitamin A and C and iron parameters (total Hb) since these vitamins may mobilize storage iron for erythropoiesis.

Table 1. Effect of Vitamin A and Vitamin C on physiological parameters

Parameter	Day 0	Day 10	Day 20	Day 30	Day 40
Weight (Kg)	71.6 ± 16.0	70.3 ± 15.2	70.0 ± 13.8	70.3 ± 14.7	69.3 ± 14.1
BMI (Kg M^{-2})	22.6 ± 4.1	22.3 ± 3.8	21.7 ± 3.9	22.0 ± 3.7	21.6 ± 3.6
Diastolic Pressure (MmHg)	83.4 ± 13.8	87.9 ± 7.8	85.6 ± 3.1	83.4 ± 1.5	82.4 ± 2.3
Systolic Pressure (MmHg)	128.7 ± 15.6	127.0 ± 13.8	123.0 ± 3.9	120.9 ± 2.3	121.9 ± 1.5
Hemoglobin(GDl^{-1})	13.8 ± 0.7	14.3 ± 0.6	14.6 ± 0.7	15.0 ± 0.7	15.2 ± 0.7

Table 2: Testing of level of significance of the supplementation of Vitamin A and Vitamin C on physiological parameters

Parameter studied	**BMI**	**Diastolic**	**Systolic**
F value calculated	0.0839	0.6172	0.8891
			
Significant	No	No	No
Parameter studied	**Hemoglobin**	**Weight**	
F value calculated	4.674	0.0270	
			
Significant	5% level of significance	No	

Where: A: Day 0 B: Day 10 C: Day 20
D: Day 30 E: Day 40
Degrees of freedom between groups: 4 Degrees of freedom within groups: 30
Table value at 5% level of significance: 2.6896

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Conflict of Interest: None Declared