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## Effect of *Allium sativum* consumption on hemoglobin among football players

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### Abstract

The purpose of the study was to find out the effect of allium sativum consumption on hemoglobin. To achieve the purpose of the study, thirty subjects were selected from Mar Athanasius College of Engineering, Kerala, India. The selected subjects were the age between 18 to 25 and they were examined by a qualified physician and certified that they were medically and physically fit to participate above programme. The selected subjects were randomly divided into three groups of 10 subjects each group. Group I acted as control group, Group II (placebo) and Group III (garlic consumed group). The experimental group subjects were underwent regular practice in their respective game for eight weeks. The subjects were tested on selected criterion variable such as hemoglobin prior to and immediately after the training period. The analysis of covariance (ANCOVA) was used to find out the significant differences if any between the groups on selected criterion variables. The result of the present study has revealed that there was garlic has the effect to increase the hemoglobin among football players.

**Keywords:** *Allium sativum*, placebo, practice, hemoglobin, football players

### 1. Introduction

Among the four stages of life, youthful stage is the most attractive and with health, strength and endurance one can achieve many laurels in one's life. But the fact is that though it is the attractive stage of life, it is short lived and cannot be brought back at any cost. As the age advances the strength to fight against all odds including diseases comes down drastically. One of the reasons for such a state is the improper nutrition ie intake of food. It needs no emphasis that he who partakes compatible food in proper quality and quantity and in time with a control over his senses will not suffer from disease. Ayurvedic drugs, on the other hand, can be given to both patients and healthy individuals simultaneously. In aients they cure diseases and in healthy individuals they prevent diseases and promote positive health. Among these herbs and spices "Allium Sativum or Garlic" is a very important medicinal plant. It is famous in its power to cure the diseases and to develop the positive health in human beings. Allium Sativum (Garlic) is a wonderful and powerful medicine among herbs. Garlic is a member of lily family closely related to onions and leeks. It has been cultivated for thousands of years for its therapeutic benefits by the ancient Egyptians, Greeks, Romans, Indians and Chinese. There are some myths related to garlic. European legend says that if a man chews a garlic bulb during a footrace, no one will be able to get ahead of him (small wonder). There is a Telugu saying that one bulb of garlic is equal to ten mothers. This means the protective or preserving power of garlic. Garlic is traditionally a peasant spice and remedy. In ancient Egypt, it was fed to laborers building the pyramids to give them strength and courage and it was an important part of the stores of military triremes. In ancient Greek athletes chewed garlic before the Olympic Games to give them vitality and endurance. The Roman patrician Virgil recommended it as a food for laborers to keep them strong during the harvest. Many of the legends surrounding it have to do with strength, speed and endurance. Garlic is endowed with several medicinal properties. It is stimulant, diaphoretic, expectorant, diuretic and tonic. It is rubefacient when applied externally. It is used as an anthelmintic and emmenagogue. The juice of garlic is used for various ailments of the stomach including amoebic dysentery. It is also used as an anti tubercular drug and in the treatment of epilepsy. It is reported to be anticholeric. Garlic reduces the blood sugar level. It is an antifertility tonic drug showing oxytocic activity.

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In general *Allium Sativum* is considered as one of the most valuable foods on this planet. It has been used since biblical times and is mentioned in the literature of the ancient Hebrews, Greeks, Babylonians, Romans and Egyptians. It has the power to cure and prevent the diseases and also to develop the positive health. So garlic may be used as an antibiotic, as an immune system enhancer, as a cancer preventive, as a cardiovascular guardian, as an enhancer of physical health. Blood is a tissue. The essential act of blood is to maintaining of hemostasis of internal tissues of body. A lot of actions are done in the body which changes the internal environment of chemical component, for example some changes will occur by contraction of muscles. Hemoglobin is a protein found within red blood cells. Its main function is to absorb oxygen at the lungs and carry this oxygen to the working muscles via the bloodstream. The makeup of hemoglobin allows it to absorb oxygen quickly and efficiently transport it through the body. It also plays a less important role in the removal of carbon dioxide from working muscle. During training cells within the body become short of oxygen. One of the ways the body adopts to this is to produce more red blood cells and hemoglobin to meet the oxygen needs of the cells. While it is not a large increase, it does improve individual's abilities to absorb and deliver oxygen to working muscles. Hemoglobin consists of the protein globin bonded to which there are four chains of amino acids each leading to a haemo group and an atom of iron. In normal adult hemoglobin the four amino acid chains are made up of two identical alpha ( $\alpha$ ) chains of 141 amino acids and two identical beta ( $\beta$ ) chains of 146 amino acids. The four iron atoms serve as the oxygen-binding sites. Hemoglobin deficiency results in anemia and may be particularly problematic for endurance athletes. Indeed the anemic endurance athlete seems to be a contradiction in terms, because of the decreased levels of hemoglobin.

## 2. Methodology

To achieve the purpose of the study, thirty subjects were selected from *Mar Athanasius College of Engineering, Kerala, India*. The selected subjects were the age between 18 to 25 and they were examined by a qualified physician and certified that they were medically and physically fit to participate above programme. The selected subjects were randomly divided into three groups of 10 subjects each group. Group I acted as control group, Group II (placebo) and Group III (garlic consumed group). The experimental group subjects were underwent regular practice in their respective game for eight weeks. The subjects were tested on selected criterion variable such as hemoglobin prior to and immediately after the training period.

### 2.1 Test Administration – Estimation of Hemoglobin

Hemoglobin concentration was estimated using calorimetric procedure by Cyanmethaemoglobin method. An aliquot of well mixed whole blood was taken and reacted with a solution of potassium cyanide and potassium ferricyanide. The chemical reaction yields a product of stable color, Cyanmethaemoglobin. The intensity of the color is proportional to the hemoglobin concentration at 540 nm.

The following reagents were used for the assay.

- (a) Reagent 1: Drabkin's reagent (50 mg potassium cyanide, 200 mg potassium ferricyanide and 1000 ml distilled water).
- (b) Reagent 2: Cyanmethaemoglobin standard.

Three sets of test tubes were taken and marked as blank, Test and standard. In the blank 5.0ml of reagent 1, then 20  $\mu$ l of an aliquot of well mixed EDTA- anticoagulated blood specimen was added, mixed well and stand for 10 minutes. Another tube marked as standard contained 5.0ml of Cyanmethaemoglobin standard. Blank solution was used for setting the spectrophotometer. Absorbance (Abs) of the test and standard was performed using spectrophotometer at 540nm.

**Scoring:** Hemoglobin concentration was expressed as g/dl.

### 2.2 Analysis of Data

The analysis of covariance (ANCOVA) was used to find out the significant differences if any between the groups on selected criterion variables. If there any significant differences found, Scheffee's post hoc test was applied.

### 3. Results

The analysis of covariance on the data obtained for hemoglobin of the pre, post and adjusted post-test of control, placebo groups and garlic consumed group have been presented in Table I

**Table 1:** Analysis of covariance of data on hemoglobin between pre-test, post-test and adjusted post-test of control placebo and garlic consumed group

	Control	Placebo	Garlic Consumed	F ratio
Pre Test	12.12	12.18	12.24	1.22
Post Test	12.24	14.28	15.58	5.78*
Ad Post Test	12.32	14.36	15.62	22.34*

The analysis of covariance on the data obtained for hemoglobin of pre test and post test of control group, placebo group and garlic consumed group have been presented in the Table 1. The table shows that pre test means of control group, placebo group and garlic consumed group were 12.12, 12.18 and 12.24 respectively. The obtained 'F' ratio of 1.22 is less than the table value of 3.35 for df 2 and 27 required for significance.

The post test means of control group, placebo group and garlic consumed group were 12.24, 14.28 and 15.58 respectively. The obtained 'F' ratio of 5.78 is higher than the table value of 3.35 for df 2 and 27 required for significance. The adjusted post test means of control group, placebo group and garlic consumed group were 12.32, 14.36 and 15.62 respectively. The obtained 'F' ratio of 22.34 is greater than the table value of 3.37 for df 2 and 26 required for significance. The results of the study indicate that there is a significant difference among adjusted post test means of control group, placebo group and garlic consumed group. Further to determine which of the paired means had a significant difference Scheffé S test was applied and the result was presented in Table II.

**Table 2:** Scheffe'S test for the difference between the adjusted post-test paired means of HEMOGLOBIN

Adjusted Post-test Means			Mean Differences	Confidence Interval
Control	Placebo	Garlic consumed		
12.32	14.36		2.04*	1.24
12.32		15.62	3.30*	1.24
	14.36	15.62	1.26*	1.24

The mean differences of hemoglobin between the control group and garlic consumed group, control group and placebo group and placebo group and garlic consumed group were 3.30, 2.04 and 1.26 respectively. The results of the study shows that eight weeks of supplementation of allium sativum produced significant increased in hemoglobin.

#### 4. Discussion

The results of the study reveal that the supplementation of allium sativum has a significant effect in the decreases of the total cholesterol. The result of the study is in consonance with Hamed and Alobaidi (2013) <sup>[4]</sup>, Tumer, Molgaard and Marckmann, (2004) <sup>[5]</sup> and Bordia, Verma and Srivastava, (1998) <sup>[6]</sup>.

#### 5. References

1. Ranjeet S, *et al.*, Oxidative Stress and Hemorheological changes induced by Acute Treadmill Exercise, Ios Press 2000, 28.
2. Mukherjee KL. Medical Laboratory Technology. In: A Procedure Manual for Routine Diagnostic Test, New Delhi: Tata MC. Graw Hill Publishing Company Ltd 1997, III.
3. David Clarke H, Harrison Clarke H. Advanced Statistics, (New Jersey: Prentice Hall Inc., 1988.
4. Hamed A, Alobaidi A. Effect of Nigella Sativa and Allium Sativum Coadministered with Simvastatin in Dyslipidemia Patients: A Prospective, Randomized, Double-blind Trial, Antiinflamm Antiallergy Agents Med Chem 2013.
5. Turner B, Mølgaard C, Marckmann P. Effect of Garlic (Allium Sativum) Powder Tablets on Serum Lipids, Blood Pressure and Arterial Stiffness in Normolipidaemic Volunteers: a Randomised, Double-blind, Placebo-controlled Trial. British Journal of Nutrition 2004;92(4):701-6.
6. Bordia A, Verma SK, Srivastava KC. Effect of Garlic (Allium Sativum) on Blood Lipids, Blood Sugar, Fibrinogen and Fibrinolytic Activity in Patients with Coronary Artery Disease, Prostaglandins Leukot Essent Fatty Acids 1998;58(4):257-63.