

**ALLIUM SATIVUM AS ANTI-ALLERGENS**

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ABSTRACT

Allergy is a condition in which the immune system reacts abnormally to a foreign substance. It mainly occurs due to hypersensitivity of the immune system and releases the damaging histamines. Allergies may affect the whole body. It especially affects the skin, nasal passage, eyes and lungs. Eating two raw cloves of *Allium sativum* is very much effective and even its juice keep the doctor away. Eating raw *Allium sativum* everyday fights against all types of allergies. *Allium sativum* boost the immune system. In this research, extracts have been prepared of *Allium sativum*. As extracts of several spices have been reported to

play a vital role in enhancing immunological function. The evaluation of oral administration of fresh aqueous *Allium sativum* extracts at different concentrations in rats were estimated and by which total and differential White Blood Cell counts were recorded and our findings revealed that total WBC counts were significantly increased ($P \leq 0.05$) in a dose dependant manner revealed that total WBC counts were significantly increased ($P \leq 0.05$). In garlic extract (300mg/kg/d: 420 ± 20 cell/ul and $3.01 \pm 0.10 \times 10^3$ cell /l; 600 mg/ kg/d: 498 ± 35 cells/ul and $2.98 \pm 0.15 \times 10^3$ cell/ l; 850mg/ kg/d: 680 ± 10 cell/ μ l and $3.66 \pm 0.02 \times 10^3$ cell/l) all treated rats were compared with the zero control i.e. 198 ± 10 cells/ μ l and $1.66 \pm 0.02 \times 10^3$ cells/l, respectively. At 850 mg/kg/d had significantly increased the total white blood cell count when it was compared with the other concentrations ($P \leq 0.05$).

KEYWORDS: *Allium sativum*, allergy, immune system

INTRODUCTION

Allium sativum is commonly known as Garlic and Onion, shallot, Chinese onion, leek and chive are the close relatives.^[1] It belongs to a family Liliaceae. It is a bulbous plant. There are various health benefits of Allium sativum.^[1,2] Few are following;

- Raw Allium sativum may cure lung infection
- It may use as a blood purifier
- It can prevent heart disease
- Anti-bacterial and Anti-parasitic
- It may prevent from cancer disease
- Beneficial for skin and hair

The human immune system has a central role in protecting against various external factors like allergens.^[2,3] The immune system regulates itself by means of helper and suppressor cells and soluble products.^[3] Various types of spices play a contributory role in enhancing immune function. Among these Allium sativum is the most effective medicinal spice.^[4] Allium sativum have high content of vitamin-c. It also have the antimicrobial properties due to which it is a significant and potent immune-system booster.^[4,5] It is also very effective against viral, bacterial, fungal and parasitic infection.^[5]

These are the common causes of allergies -

- Pollen
- Dust
- Certain foods
- Certain medications
- Latex Insect bites and stings
- Animal fur and dander
- Mold
- Antibiotics

Allium sativum is a natural antibiotic.^[6] Various viruses, infections, allergies may be cured by it. Allium sativum helps in relieving rashes, itching skin, puffy eyes etc.^[5,6] There are few allergies which may leads to weight gain. Allium sativum treat allergies by helping immune system to work normally by affecting or attacking allergens and eliminating them completely from the blood stream naturally.^[7] Allium sativum is a herbal remedy for treating allergies,

cold and flu naturally. Allergens are the free radical cells that affect the immune system to exhibit allergy symptoms.^[6,7]

Caution

- Allium sativum Linn. should not be consumed by Asthma patients as it may have some side-effects.^[8]
- It should be avoided before any surgeries or medical operations.
- Do not consume more than 2-3 Allium sativum Linn. cloves in a day.^[9]

MATERIALS AND METHOD

Animals-24 male Wistar Albino rats weighing 110g - 160g were bought from Sanzyme P Ltd., Banjara Hills, Hyderabad and treated for 28 days.

Plant- Cloves of Allium sativum were purchased from the vegetable market in Sasaram, Bihar.

Preparation of crude aqueous extracts

By using knife the outer light scaly leaves on the fresh Allium sativum were peeled off then washed with sterile distilled water. About 50g of the washed Allium sativum were weighed and homogenised in a clean electric blender containing 60 ml distilled water and obtained a 70% concentration then it was shaken for 2 hours in a rotary flask and then filtered in a sterile containers containing sterile cotton wool and later with Whatman filter paper. The liquid filtrates were transferred into separate sterile bottles and stored.

Pharmacological Experimentation

The twenty-four (24) male Wistar Albino rats were weighed (110-160g) and used in the study. They were randomly chosen into 8 groups of 3 rats in each group (n=3) and then they were treated as shown in table.

The extracts in volume were administered to all rats individually of each group. The volume administered was (1ml/110gbodyweight). Then, the changes in body weight throughout the treatment phase i.e.14 days were daily calculated and recorded. Oral administration of fluids into the lower esophagus of all experimental animals were done by using a stainless steel ball tip-feeding needle was introduced into the mouth and then it was threaded down in the esophagus.

Experimental Animals Weighed and Measured

The controlled and treated groups of experimental animals were weighed and measured daily with analytical balance throughout the treatment.

Post Treatment

After last administration all experimental animals were placed on 12hrs fasting and on 15th day, the half of the experimental animals from each group named as (Z₁, Y₁, X₁, W₁, V₁, U₁, T₁, S₁). Then the cervical dislocation was done to all of these selected rats.

Collection of Blood Specimen

By terminal bleeding from the heart blood specimen were collected from each rat. Firstly the dead rat was kept on the cork board on its back side then fore legs and hind legs was strapped and needle was inserted at the tip of the sternum and pushed at 45⁰ till the heart punctured. The blood started flowing into the syringe and 3 ml cardiac blood specimen was collected in a clean container with anticoagulant (EDTA) ready for investigations.

WBC Counts

WBC counts were estimated by employing WBC detector block and WBC/HGB lyse reagent to measure WBC count.

Post-Recovery

The change in immunological cell concentrations was reversible or not was assessed by discontinuing the treatment. The procedure mentioned above were repeated with the second half of their naming animals from each group named as (Z₂, Y₂, X₂, W₂, V₂, U₂, T₂, S₂) after 14 days of recovery period i.e. total 28 days.

Statistical Analysis of All Group

From all control and treated 8 groups the numerical results were collected and data was presented and analysed. P-values ≤ 0.05 were considered significantly.

RESULT

The research revealed that total WBC counts were significantly increased ($P \leq 0.05$). In garlic extract (300mg/kg/d: 420 ± 20 cell/ μ l and $3.01 \pm 0.10 \times 10^3$ cell/l; 600mg/kg/d: 498 ± 35 cells/ μ l and $2.98 \pm 0.15 \times 10^3$ cell/l; 850mg/kg/d: 680 ± 10 cell/ μ l and $3.66 \pm 0.02 \times 10^3$ cell/l) all treated rats were compared with the zero control i.e. 198 ± 10 cells/ μ l and $1.66 \pm 0.02 \times 10^3$ cells/l, respectively.

At 850 mg/kg/d had significantly increased the total white cell count when it was compared with the other concentrations ($P \leq 0.05$).

Treatments	$\bar{X} \pm SEM$ Total WBC ($\times 10^3$ Cell/ μ l)	$\bar{X} \pm SEM$ LYM# ($\times 10^3$ Cell/ μ l)	$\bar{X} \pm SEM$ NEUT# ($\times 10^3$ Cell/ μ l)	$\bar{X} \pm SEM$ MXD# ($\times 10^3$ Cell/ μ l)
Zero Control	1.66 \pm 0.02	0.78 \pm 0.08	0.30 \pm 0.02	0.07 \pm 0.00
Positive control	3.34 \pm 0.02	2.76 \pm 0.04	0.33 \pm 0.09	0.01 \pm 0.01
Negative control	0.02 \pm 0.01	3.46 \pm 0.06	0.69 \pm 0.06	0.01 \pm 0.21
300mg/kg/d garlic extract	2.01 \pm 0.10	1.70 \pm 0.08	1.6 \pm 0.05	0.07 \pm 0.03
600mg/kg/d garlic extract	2.98 \pm 0.15	3.35 \pm 0.10	1.79 \pm 0.15	1.25 \pm 0.01
850mg/kg/d garlic extract	3.66 \pm 0.02	3.79 \pm 0.03	2.36 \pm 0.08	3.33 \pm 0.01

Effects of Garlic Extract on Experimental Rats

DISCUSSION

An average normal range of WBC in human is between 3,500 and 10,500 white blood cells per microlitre of blood (mcl).^[10]

Our study revealed that there is a strong connection between the extract of garlic with immune system.^[11] This research shown a significant increase in *Allium sativum* treated rats. The earlier works showed that garlic extract may improve the activation of T-lymphocytes and also natural killer cells in AIDS patient.^[10,11]

Furthermore, in this research, the treated groups with *Allium sativum* were observed that there is a significant increase in total white blood cells count when compared with zero control.^[12]

How Allergies Are Treated By Garlic

Allium sativum is a natural anti histamine for allergies.^[13] *Allium sativum* can be used during allergy season for relieving sinus pressure due to its strong aroma.^[12,13] *Allium sativum* is an excellent antihistamine due to high amounts of antioxidants and essential healing oils in it which helps in boosting the immune system during allergy and fight off histamine and reduce the allergy symptoms.^[13,14]

The Way Garlic Works against Allergies

Pollen, dust, molds, pet dander and sometimes foods are the allergens that causes allergy.^[15] These allergens are free radical cells that affect the immune system to go crazy triggering allergy symptoms.^[15,16]

Allium sativum helps the immune system to work normally by attacking the free radical cells or allergens and removing them completely from the blood stream.^[17,18]

Way to Use Allium Sativum as a Remedy

The best way to use Allium sativum to treat or relieve allergy naturally is by

- Peeling and chopping up 2-4 Allium sativum Linn. Cloves.^[19]
- Mixing them with 2-3 tablespoons of honey until a thick syrup with small chunks appears.^[20]
- Simply scooping the Allium sativum honey syrup into the mouth and swallow it down until it is gone inside.
- Repeat the process 2-3 times a day until the allergy symptoms are relieved.^[21]

CONCLUSION

Atlast, this research revealed that along with various other medicinal properties, the extracts of fresh A. sativum when administered have immuno- stimulating properties.

Allium sativum is a potential natural remedy for allergy. This research may be useful to increase our knowledge of Allium sativum effects for allergy and improve our future experimental and clinical research plans.

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