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## Garlic: An antimicrobial agent

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### Abstract

India produces a large variety of spices in the world. In India spices are not only used to add flavor, aroma and colour to food but also it is used for medicinal values as well as used as preservative by inhibiting the food spoiling bacteria growing on food. Raw garlic (*Allium sativum*) has the potential to ward off a cough and cold infection. Garlic is a important part of kitchen because it is health benefit based on its antimicrobial and antioxidant properties. It contains antioxidant components like S-allyl-cystelne sulfoxide (alline). Indian mango pickles contain fresh raw garlic cloves in its preparation due to which life of pickles gets increased for longer period of time as compared to non garlic contain pickle. Many spices like garlic, ginger, onion etc posses significant antimicrobial activities against food spoilage bacteria like *Bacillus species*, *Staphylococcus aureus*, *E. coli*. Therefore, food industry and its product require to inhibit the growth of food spoilage bacteria. Therefore, spices have a great potential to be developed as a new and safe microbial agent.

**Keywords:** *Allium sativum*, spices, antimicrobial agent

### 1. Introduction

India is well known for its strong aromatic spices. A huge amount of spices are exported to all over world. In 2009-2010, the export ofspices from India stood at 502,750 tonnes. In ancient time spices was the most attractive trade item which led to colonisation of India. Among 80 types of spices in the world, India alone produces 50types.India produces a variety of spices. From ancient time people are going on using spices as food additive, either to add color, flavor or aroma to the food. Spices and herbs are also being well known for its medicinal value. The most essential spices in India foods are Pepper, Garlic, Cumin, Coriander, Mustard, Curry leaves. Cinnamon, Cardamom, Turmeric, Ginger, Chilly. In India spices are not only used to add flavor, aroma and color to food, but also it is used for many medicinal values. It is used to heal skin disease, cold and cough, indigestion, diabetes, heart disease and many others.

Many spices and vegetables are also known for their antioxidant activity and usefull in preventing oxidation of fat and lipid tissuesin food and living tissues (Madhumita Rakshit and C. Ramalingam 2010) <sup>[1]</sup>. Garlic belongs to the Liliaceae family. The antimicrobial activities of garlic have been recognized for many years, and the active component was identified as allicin, a diallyl thiosulfinate (2-propenyl-2-propenethiol sulfonate). Garlic contains so many properties like Garlic Contains Antioxidants, To Prevent Alzheimer's Disease and Dementia, Garlic Improves Cholesterol Levels, Which May Lower the Risk of Heart Disease, Garlic Contains Compounds With Potent Medicinal Properties.

In India village people like farmers use cloves of garlic in his daily preparation of food. The use of single clove garlic is more familiar to be used for medicinal purposes. The health benefit of garlic is based on its properties as antimicrobial (Prima Retno Wikandari, 2020) <sup>[4]</sup>.

### 2. Screening of antimicrobial activity

#### 2.1 Media

Nutrient Agar (NA) was used as base medium for screening of antimicrobial activity and Nutrient Broth (NB) (Hi-Media) used for preparation of inoculums.

#### Preparation of inoculums

Four to five colonies from pure culture of each test organism were transferred to 5 ml of NB.

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The broth was incubated at 35-37 °C for 18-24 hours. Now active culture used to study antimicrobial activity.

*sativum*) Pickle, Digital Press Life Sciences 2020;2:00006.

## 2.2 Filter paper Disc method used

Screening of antimicrobial activity was performed by using diffusion technique. The NA plates were seeded with 0.1 ml of the standardized inoculum of each test organism. The inoculum was spread evenly over plate with sterile glass spreader. Take sterile filter paper disc deep in prepared fresh garlic suspension and kept on seeded agar plate.

Then the seeded plates were allowed to kept in the freeze at low temperature for 20 minutes for law of diffusion.

## 2.3 Incubation

Prepared seeded agar plates then remove from freeze and incubated at 35-37°C for 18-24 hours. zone of inhibition was measured in miliimeter (mm).

**Table 1:** Antimicrobial activity of Garlic against test organism after 24 hours.

Test organism	Zone of inhibition (mm)
<i>Bacillus subtilis</i>	10 mm
<i>Stapylococcus aureus</i>	16 mm
<i>E. coli</i>	11 mm
Control	No zone of inhibition.

## 3. Conclusion

Number of different spices which are used to add flavour and taste to the food, only garlic was found to be the broad spectrum antibacterial spice. In this connection, the present study was conducted to evaluate the antibacterial activity of the spices that are daily used in our food.

Among all these spices which are used to add flavour and taste to the food, only garlic was found to be the broad spectrum antibacterial spice. (Madhumita Rakshit and C. Ramalingam 2010) <sup>[1]</sup>.

These spices could be used to decrease the possibility of food poisoning and spoilage, to increase the food safety and shelf-life of products, and to treat some infectious diseases (Qing Liu, Xiao Meng, *et al* 2017) <sup>[3]</sup>. In conclusion, garlic showed great antimicrobial activities at low concentrations against several pathogenic microorganisms like *E. coli* and *S. aureus*. Without cut it if used in Pickle kept its original properties, so maximum villagers used clove of garlic Fresh garlic was found to possess higher antimicrobial activities than garlic paste.

## 4. References

1. Madhumita Rakshit, Ramalingam C. Screening and Comparison of Antibacterial Activity of Indian Spices, Journal of Experimental Sciences 2010;7(1):33-36.
2. Papachan Karur Sofia, Rajendra Prasad, Virendra Kumar Vijay, Ashok Kumar Srivastava. August, Evaluation of Antibacterial Acitivity of Indian Spices against common foodborne pathogens, International journal of food science and technology 2007;42(8):910-915.
3. Qing Liu, Xiao Meng, Ya Li, Cai Ning Zhao, Gua-Yi Tang, Hua- Bin Li. Antibacterial and Antifungal activities of Spices, Int J Mol Sci 2017;18(6):1283.
4. Prima Retno Wikandari, Lenny Yuanita, Nuniek Herdyastuti, Herman Joseph Bimo K, Renita EkaJuniariani, Farindya Dwi Cahyaningtyas. Antioxidant Properties of Single Garlic (*Allium*