

AN ASSESSMENT OF ANTIMICROBIAL ACTIVITY OF SOME INDIAN SPICES

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ABSTRACT

The two biggest antibiotic toxicity and multi drug resistant pathogens are challenges that the medical world of today faces. In the present research, the as an alternative to antibiotics, antimicrobial spice activity has been studied. To tackle those risks, searching for a bioactive compound, methanol and acetone. The acetone extract was tested for antibacterial properties from three Indian spices. The choice of spice as an alternative is based on two fundamental reasons: first, plants have two main reasons: Since ancient times, it has been the model source of medicine and, secondly, the growing acceptance of herbal drugs by the general methanolic and acetone population. Extracts were used to assess the spices' antibacterial properties. The three main Indian spices, including clove, black pepper & fenugreek seeds, have antimicrobial property towards *E. coli*, *P. auregenosa* and *S. aureus*.

Key words: Antibiotic, Toxicity, Bioactive compound, Herbal drugs, Spices'

INTRODUCTION

Plant species have been a reliable source of energy for just a prolonged period of time, naturally sourced to Maintaining human health , particularly within the last decade, more comprehensive research for natural therapies [1].

Spices were used not only for taste, but also for flavour. Food and flavour, but also to have Properties of antimicrobials [2]. Spices can add piquancy for food and drinks [3]. Apart from these herbs, there are some of the natural ones most widely used, in foods, antimicrobial agents. Any of the ones natural compounds those are present in different spices antimicrobial possession [1].

Actions must, therefore, be taken to regulate the while using the plant extracts, this issue Phytochemical containers that have Antimicrobial characteristics [4]. Spices have been described as a substance from plants that is derived from native or exotic roots, aromatic with aromatic Effective taste that is used to improve the taste of food 1 . As far ago, humans used spices in their foods Yeah, like 50,000 B.C. but, beyond adding colour, the dried ones are You may also add years of

seeds, berries, root or bark to your life. In Natural herbs and spices were eaten in ancient India. Either in food, or used as medicine to preserve Proper sanitation, fitness and sanitation, and to improve Life's durability.

Spices, such as cloves, in this respect, (toothache, headache, pain), cinnamon (problems with nervousness, Infections of the stomach / intestine), mustard, garlic (antiseptics, Diuretic medication), ginger (digestive aid, cold), etc. has been shown to have very good therapeutic properties [5].

Put aside spices are also a big part of Indian cuisine, and contribute to the new allopathic healthcare scheme through a large number of medicines or parent compounds are given. Spices were not only used as flavouring agents but also as flavouring agents, preservative food. Any spices extend the shelf life of by avoiding rancidity through their antioxidants, foods real estate. Spices are abundant in phytonutrients and other active substances Ingredients that protect against and facilitate illness for recovery [6].

In global studies, spices have been correlated with The treatment and prevention of chronic conditions, such as Cardiac disease, cancer, diabetes type II, and Alzheimer's. In comparison to prescription medicines, spices can be used for a long time— expression without concern for side effects[7,8].

The scent and taste of each spice are distinctive. They are the widely used against different forms for their antibacterial effects Yeah. Bacteria. In the safeguard, the ultimate use of spice can lay Phytochemicals results. The phenolic appearance in the Spices plays an important role in anti-bacterial activity and is important. The use of spices decreases or prevents the production of micro spices [9].

Before they create some pollutants, cells. An Interrelation between the properties that benefit from health It is important to scientifically re-establish the use of spices and their use in food. Within the traditional Indian medicine system the different spices and herbs of Ayurveda and Siddha are identified as having medicinal characteristics, such as being Anti-oxidant, antithrombotic, antibacterial [10,11].

This research explains the antiatherosclerotic, hypolipidemic, hypoglycemic, anti-inflammatory, ant arthritic, etc. 6. The

antibacterial effect of certain spices used in Indian products For its flavour and taste, kitchen. The royal pedigree, King of Spices, is black pepper. It was more valuable than gold in the early days. Just the ones wealthy could afford , it was endowed with dowries, and It was used to pay several bribes for special favours. Piper nigrum, a monoecious, belongs to the genus piperaceae, Perennial herb for climbing, native to Southern India and Srilanka, which is grown in tropical regions. It is a branch that is Vine ascending, rooting at the nodes. Leaves easy, alternate, cordate, broad ovate, nerves 5-9, dark green [12].

Minute flowers, with spikes of variable length. Ovoid fruits one is seeded, bright red when ripe, or globose. Seeds Globose, thin with testa, rough and white perisperm. It is discovered in vast altitudinal variation and great adaptability to a variation of altitudes a wide range of conditions in the atmosphere and soil that lead to diversity of Inter Species. It is India's leading maker, user and exporter. In the nation, black pepper [13].

Pepper receives its spicy heat mostly from the compound of piperine, which is present both in the In the seed and in the outer fruit. Includes black pepper between by weight, 4.6 % and 9.7% piperine [14].

METHODOLOGY

Collection of samples:

The spices namely black pepper (*Pepper nigrum*), clove (*Syzygium aromaticum*), Fenugreek seeds were used for the present study collected from the local market.

Pathogens reviving:

The bacterial pathogens *Escherichia coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* were used for the antibacterial analysis. The cultures were sub cultured in nutrient broth before performing [15].

Preparation of spice extract

The collected samples were washed with distilled water and then sun dried. Further the samples were grinded and converted to powder.

Further these samples were dipped into polar and nonpolar solvents in 1:10 ratio. Then the samples were incubated at room temperature for 48 hours. The samples were then filtered and the solvents were allowed to dry. The remaining residues were dissolved into dimethyl sulphoxide and preserved for screening [16,17].

Antibacterial Screening of extracts:

The screening was carried out by using agar well diffusion method, were the extracts were loaded to well and then incubated at 37°C for 24 hours [18].

Phytochemical screening of extracts:

Different activities possessed by plant in due to the presence of certain bioactive components or the secondary metabolites. Trease and Evans gave a standard procedure for the identification of these secondary metabolites [19,20].

RESULTS

Collected samples

The samples were collected from local market and then washed with distilled water. Further the samples were allowed for sun dry and then grinded and converted into powder.



Clove

Black pepper

Fenugreek
seeds

Figure 1: collected spices samples

Pathogens

We use *Escherichia coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* available at Bioegicore LifesSciences as my test pathogens.

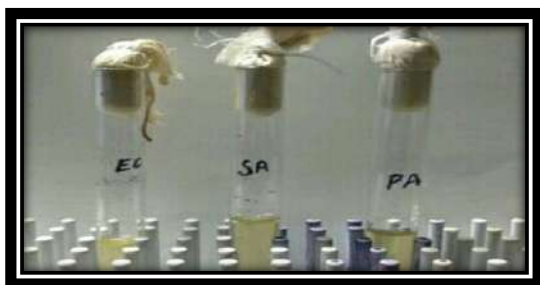


Figure 2: Sub cultured bacterial pathogens such as *Escherichia coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*.

Extracted metabolites

The extracted metabolites were dissolved in dimethyl sulphoxide and preserved at 0°C for further antibiogram analysis.

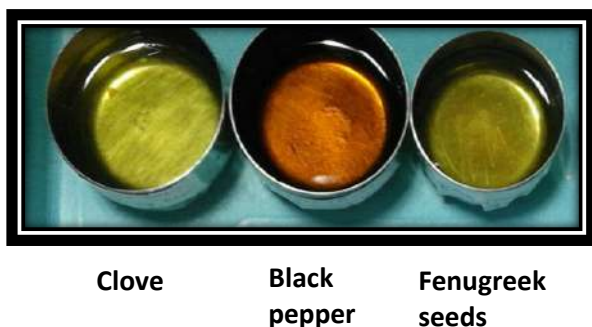


Figure 3: extracted metabolites from spices

Antibiogram analysis

The metabolites were screened against *Escherichia coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* for the assessment of their antibacterial properties.

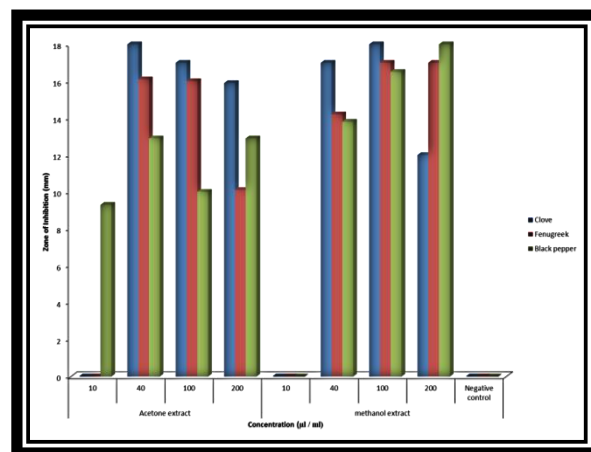


Figure 4: graphical representation for the antibacterial screening of spice extracts against *Staphylococcus aureus*

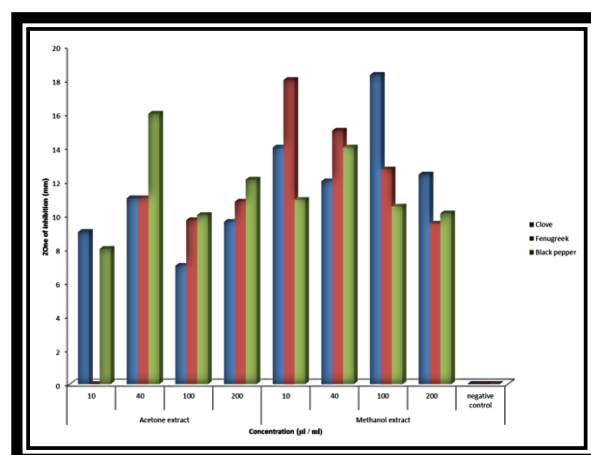


Figure 5: graphical representation for the antibacterial screening of spice extracts against *Pseudomonas aeruginosa*

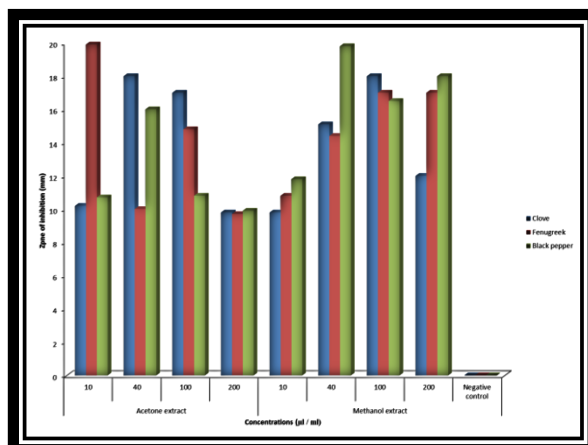


Figure 6: Graphical representation for the antibacterial screening of spice extracts against *Escherichia coli*.

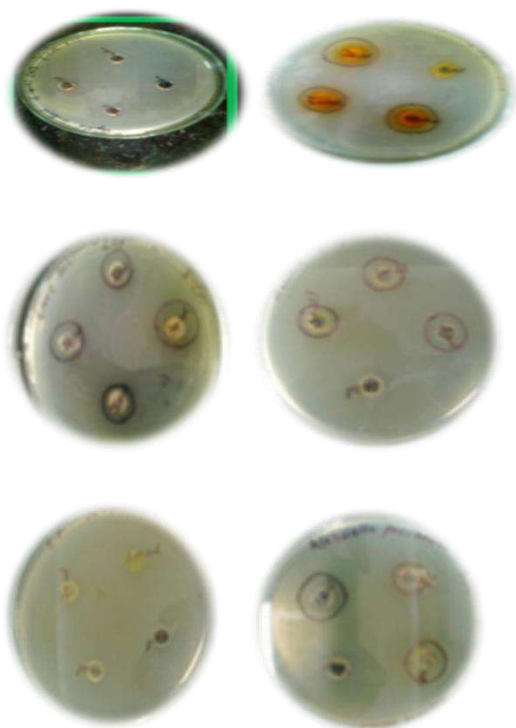


Figure 7: The clear zone expressing the Zone of Inhibitions of extracts against respective pathogens

Phytochemical analysis:

Table3: Test for different phytochemical analysis was done and results were observed.

Phytochemical	Cloves		Black peppers		Fenugreek seeds	
	Acetone	Methanol	Acetone	Methanol	Acetone	Methanol
Flavonoids	Positive	Positive	Positive	Positive	Positive	Positive
Tanins	Positive	Positive	Positive	Positive	Positive	Positive
Steroids	Negative	Negative	Negative	Negative	Positive	Positive
Saponin	Positive	Positive	Negative	Negative	Positive	Positive
Glycosides	Positive	Positive	Negative	Negative	Positive	Negative
Alkaloids	Positive	Negative	Positive	Positive	Positive	Positive

DISCUSSIONS

The last few years have witnessed a change, with the modernization of the world and advancement in technology we have a great increase in medicines.

The disease which were non- curable some year back are new no longer a threat. In fact human rased is totally immune to some of disease. New pathogen which is multiple drugs resistant has come into existence. To combat such a scenario we consume loss of medicines antibiotics through they show instant result and we get cured in immune possible time, but these medicines have an adverse effect on us. Prolonged use of such highly dose medicines which are the cure us today make us ill today.

Nature has a blessed us with a vast treasure of medicinal plants. Despite giving us fruit to eat wood for fuel lowers for aesthetic beauty all what nature gives us is the gateway to herbal medication it is we who need to discover it and implement in the benefit of human beings and entering in to this gateway I choose four different plants the evaluate its antimicrobial activity and didn't obtained the good results. The results suggest that turmeric, clove, pepper and Fenugreek powder, they produced significant antimicrobial effects. In the antimicrobial study of spices, antimicrobial activity against *Pseudomonas aeruginosa* maximum activity was shown in methanol extract of clove and minimum activity was shown in both acetone

and methanol black pepper extract. Antimicrobial activity against *Staphylococcus aureus* maximum activity was shown in methanol extract of clove , and minimum activity was shown in both acetone and methanol extract of Fenugreek powder and black pepper. Present studies showed that methanol extracts of spices (clove, black pepper and Fenugreek powder,) given high antimicrobial activity against different bacteria (*Pseudomonas aeruginosa* , *Escherichia coli* and *Staphylococcus aureus* shown similarity with previous results (Abhishekh. Seth, 2010). For finding the phyto-compounds which are present in the plants are qualitatively analyzed with phytochemical tests regarding the phytochemicals.

CONCLUSION

The data supports the hypothesis that some common Indian spices have an inhibitory effect on the growth of certain food borne pathogens in tissue culture. The results suggest that turmeric, clove, pepper and Fenugreek powder, they produced significant antimicrobial effects.

In the antimicrobial study of spices, antimicrobial activity against *Pseudomonas aeruginosa* maximum activity was shown in methanol extract of clove and minimum activity was shown in both acetone and methanol black pepper extract. Antimicrobial activity against *Staphylococcus aureus* maximum activity was shown in methanol extract of clove, and minimum activity was shown in both acetone and methanol extract of Fenugreek powder and black pepper. Present studies showed that methanol extracts of spices (clove, black pepper and Fenugreek powder,) given high antimicrobial activity against different bacteria (*Pseudomonas aeruginosa*, *Escherichia coli* and *Staphylococcus aureus* shown similarity with previous results (Abhishek. Seth, 2010).

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