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Antibacterial Activity of Kitchen Spices against Some Pathogenic Organisms

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Abstract: ***The antibacterial activity of kitchen dried spices were studied against as aeruginosa, Klebsiellapneumoniae and Staphylococcus aureus. The kitchen dried spices like Pepper (Piper nigrum), Clove (SyzygiumThPseudomodromaticum) Cumin (Cuminumcyminum), Femel (Foemiculumvulgare), Ginger igiberofficinale), Turmeric (Curcuma longa), were selected for present study ihe spices were powdered and extracts were prepared with many solvents like methanol, acetone and water. 10gm of powder were soaked in the solvents for 10 days. Then the extracts were filtered and filtrated was utilised for the antibacterial activity. The antibacterial activity of dried spices was performed by disc diffusion method, the results obtained were tabulated. The methanol extracts of dried spices against Klebsiella, Pseudomonas, Staphylococcus carried out which showed maximum zone of inhibition in Clove and minimum in Fennel. The acetone extracts of Ginger showed maximum zone of inhibition while in Turmeric, maximum zone of inhibition was measured . The dried spices showed its own antibacterial activity when it was extracted with water solvents maximum in Pepper and minimum in Fennel. Hence the dried spices can be used in the ailment of throat infection since these microbes were present as normal micro flora of throat in human beings.***

1. Introduction

Nature has bestowed on us a very rich botanical wealth and large number of diverse types of plants grow in different parts of the country. Natural products, either as pine compounds (or) as standarised plant extracts, provide in limited opportunities for new drug leads because of the unmatched availability of chemical diversity. India is a varietals emporium of medicinal plants and is one of the richest countries in the world in regard genetic resources of medicinal plants. Moreover the agroclimatic conditions are conducive for introducing and domesticating new exotic plant varieties (Martins et al, 2001). Since time immemorial, man hasused various parts of plants in the treatment prevention of various ailments (Tanaka et al., 2002).

On ancient literature has references of plants reduced to cure difficult and incurable disease. The tribal's have developed own traditional knowledge related to plant medicine, which have become treasure and cultural heritage of Tribal's have vast knowledge about, traditions medicine for various disease. Since they have some superstitious beliefs they do not reveal the medicinal secrets to others.It is hoped i the future, Etheno botany may play an increasingly importart role in sustainable development and obedivantly conservation (Rajasekarwamen, 1994). In recent years , secondary plant metabolic (phytochemicals), previously with unknown pharmacological activities, have been extensively investigated as a source of medicinal agents (Krishnaraju etal., 2005). Therefore researchers are increasingly turning their attention to folk medicine, looking for new leads to develop better drugs against microbial infections (Benkeblia., 2004).

Aim and Objective

- To determine the antibacterial activity of dried spices like Pepper, Clove, Cumin Fennel Ginger, Turmeric, Against Gram positive and Gram negative Bacteria , Gram Positive- Staphylococcus aureus, Gram Negative- Klebsiellapneumoniae, Pseudomonas aeruginosa.
- To prepare Methanol extracts of dried spices.
- To prepare Acetone extracts of dried spices.
- To prepare aqueous extracts of dried spices.

2. Materials & Methods Materials

Materials

Plants how the extracts are prepared with different solvents.

Characteristies of Microbes:

Klebsiellapneumoniae:
Kingdom: Bacteria
Phylum: Proteobacteria
Class: Gamma proteobacteria
Order: Enterobacteriales
Family: Enterobacteriaceae
Genus: Klebsiella
Species: pneumoniae

Klebsiella pneumoniae is a Gram-negative, non-motile. Encapsulated lactose fermenting, facultative anaerobic, rod shaped bacteria although found in a normal flora of the mouth, skin and intestines it can cause distractive changes to human lungs if aspirated.

Pseudomonas aeruginosa :

Kingdom : Bacteria
Phylum : Proteobacteria
Class : Gamma proteobacteria
Order : Pseudomonadaces
Family : Psudomonadaceae
Genus :Pseudomonas
Species : aeruginosa

Pseudomonas aeruginosa is common bacterium that can cause disease in animal including humans it is found in soil water, skin flora and most man- made environments through the world. It thrives not only in normal atmospheres but also in her toxic atmosphere.

Staphiylococcus Aureus

Domin :Bacteria

Kingdom :Eubacteria
Phylum : Firmicutes
Class : Bacilli
Order :Bacillales
Family :Staphylococcaceae
Genus : Staphylococcus
Species : aureus

Staphylococcus aureus is a bacterium that is a member of the formicates and is frequently found in the human respiratory tract and on the skin. Although S. aureus is not always pathogenic it is a common cause of skin infection disease associated strains other perforate infections by producing portent proteins toxins.

Description of the Dried Species

The characteristics of the kitchen dried species were related in TABLE-l

AND PLATE-I METHODS:
The Antibacterial activity of kitchen dried spices against Klebsiell apneumonia, Pseudomonas aeruginosa and Staphylococcus aureus, were analysed through disc diffusion method (PLATE-2).

3. Methodology

The plant product was powdered and soaked in the different solvents 10 g of powder was soaked in 50 ml of solvents like methanol, acetone and water were used. This set up was kept for 10 days after 10 days of soaking, the herbal extracts were filtered and the filtrate was stored.

4. Result and Discussion

The preliminary screening of antibacterial activity of methanol, Acetone eric and Aqueous extraction of Pepper, Clove, Fennel, Cumin Ginger and Turm against normal flora of throat were carried out by Disc diffusion method.

Methanol extracts
The antibacterial activity of methanol extracts of Pepper, Clove, Cumin, Fennel, Ginger, and Turmeric against pathogens was recorded in the TABLE-2 & PLATE-3.

The zone of inhibition was maximum in Clove maximum in Fennel against Klebesiella. Staphylococcus and Pseudomonas. It comparatively staphylococcus showed maximum zone of inhibition both in monocots (Ginger, Turmeric). Dicots (Pepper Clove Cumin , Fennel) The results were observed in Fig-1

Antimicrobial activity of methanol extract of clove was better than the ethanol extracts of clove against all the test organisms which were showing better result. Methanol extract of Clove showed maximum zone of inhibition against Staphylococcus and minimum against P.aeruginosa. (Pandey and singh, 2011).

Acetone extracts: The antibacterial activity of Acetone extracts of Pepper, Clove Cumin , Fennel Ginger and Turmeric against pathogens were recorded in the TABLE-3& Fig -2.

The Acetone extracts of pepper and Turmeric against Klebsiella Pseudomonas showed maximum zone of inhibition were as Staphylococcus showed little resistance against all the dried species (PLATE-4)

Gayatirnahak and sahu (201). The medicinal properties of Piper nigrum and their therapeutic usage by the presence of an alkaloid, piperine naturally found in plants The present study was aimed to extracts the phyto chemical compounds in the different solvents, showed a possible antibacterial activity against four standard pathogenic microbes such as Staphylococcus aurous Escherichia coli Pseudomonas aeruginosa and Salmonella typhi

Aqueous extracts
The antibacterial activities of the aqueous extracts of dried spices against pathogens were recorded in the TABLE-4 & PLATE-5.

The maximum zone of inhibition (20mm) of Pepper was found against Klebsiella where minimum 8mm in Fennel against Pseudomonas aeruginosa

Since the extract was aqueous, the original nature of the dried spices their photochemical nature does not change, hence all the dried spices showed its own antibacterial activity against Klebesiella peneumoniae, Pseudomonas aeruginosa and Staphylococcus aureus were observed.

From the present study, it was clear that methanolic extract showed maximum positive results then the acetone and aqueous extracts. Thus the dried spices can also be utilised as one of the ailments for the throat infections

5. Summary

The antibacterial activity of kitchen dried spices were studied against as aeruginosa, Klebsiellapneumoniae and Staphylococcus aureus.

The kitchen dried spices like Pepper (Piper nigrum), Clove (SyzygiumThPseudomodromaticum) Cumin (Cuminumcyminum), Femel (Foemiculumvulgare), Ginger igiberofficinale), Turmeric (Curcuma longa), were selected for present study ihe spices were powdered and extracts were prepared with many solvents like methanol, acetone and water. 10gm of powder were soaked in the solvents for 10 days. Then the extracts were filtered and filtrated was utilised for the antibacterial activity.

The antibacterial activity of dried spices was performed by disc diffusion method, the results obtained were tabulated.

The methanol extracts of dried spices against Klebsiella, Pseudomonas, Staphylococcus carried out which showed maximum zone of inhibition in Clove and minimum in Fennel.

The acetone extracts of Ginger showed maximum zone of inhibition while in Turmeric, maximum zone of inhibition was measured.

The dried spices showed its own antibacterial activity when it was extracted with water solvents maximum in Pepper and minimum in Fennel. Hence the dried spices can be used in the ailment of throat infection since these microbes were present as normal micro flora of throat in human beings.

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