Comparative analysis of antimicrobial activity leaf extracts against prevalent Bacterial flora Associated with doorknobs at MIET, Meerut(U.P)

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Abstract - Microorganisms can be found everywhere, bacteria and fungi contaminate the human body, our houses, workplaces, and our environment. Fortunately, among many billions of bacteria, only 1500 can be dangerous to our health, causing different diseases such as pneumonia or skin infection. The human hand serves as a medium for the propagation of microorganisms from place to place, and from person to person. Although, it is nearly impossible for the hand to be free of microorganisms, as the presence of pathogenic bacteria may lead to chronic or acute illness. Every day, door handles are often hotspots for bacteria, public handles especially because of the frequent and inevitable use of most door handles, it can often be expected that bacteria are present. Many factors determine the suitability and population of bacteria. The material of the handle itself contributes to the growth of bacteria, with most door handles being constructed with stainless steel which is a more suitable home for bacteria. The material affects the time bacteria can survive on door handles; but more so, the temperature and humidity of the surrounding air, depending on these bacteria can thrive anywhere from a few hours to a few weeks. Human hands usually harbor microorganisms both as part of the body's normal flora as well as transient microbes contacted from the environment. People come into contact with a variety of fomites on a regular basis, and bacterial and fungal infections are on the rise.Investigators looked at the microbial growthconnected to the use of door knobs by students at MIETCOLLEGE OF EDUCATION BAGHPAT BYPASS MEERUT. 50 door knobs were randomly chosen for microbiological analysis. The samples were examined by means of conventional microbiological techniques. *Haemolytic Streptococci, Bacillus species, coagulase-negative Staphylococci, Escherichia coli, Proteus species, and Staphylococcus aureus were among the bacteria that were identified from the earphones. Aspergillus spp., Mucor spp., and Rhizopus* spp. were the fungi that were isolated. Staph. aureus, 12 (24%), are among the bacteria that were isolated from the door knobs. A substantial difference in the mean occurrence values of the isolates from the two groups was shown by statistical analysis (P 0.05). The study came to the conclusion that microbial growth does increase with frequent and continuous use of door knobs in comparison to nonfrequent use of door by comparing the occurrence values of the isolates from the two groups of door knobs users. The isolates found were screened for their antimicrobial activity and rose leaf propanol extract has the best antimicrobial effect against the isolated microbes.
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Key Word; *Microbial* Contamination, Door, Handles, Knobs, ***s*** bacteria, medicinalplants, antimicrobial activity.

INTRODUCTION

The study came to the conclusion that the growth of bacteria does increase with frequent and continuous use of Door knobs in comparison to nonfrequent use of door knobs through analysing the frequency values of the isolates from the two categories of door konbs users. The isolates found in Group A had considerably higher occurrence values than those in Group B, which is indicating a positive correlation between microbial frequency and door knobs use time. To help reduce the microbial load of door knobs and their potential as fomites in the transfer of pathogenic microorganisms handles and hands, regular cleaning of door knobs with disinfectantsprior to and following each usage is advised. This will help reduce the incidence of microbs on hand and other infections among door knobs users. About 45,000 kinds of plants in India are thought to possess therapeutic characteristics. The first step in making the best use of these types of extraction as natural antimicrobial agentsto increase shelf life and maintain food quality need

to comprehend the mechanism of antimicrobial action of medicinal plant extracts. This study aims to: (1) compare the two methods of extraction, conventional the extraction and ultrasound techniques; (2) examine the antimicrobial activity of ethanolic and water extracts of thyme (Thymus vulgaris), roselle (Hibiscus sabdariffa), rosemary (Rosmarinus officinalis), clove (Syzygium aromaticum), and roselle (Hibiscus sabdariffa), against seven common food pathogens and spoilage microorganism. The ancient man acquired information about the use of plants for food, medicinal, and other uses through his own observation and experiences.

Although most people have access to adequate food and medical facilities in the modern day, food insecurity and a lack of medical facilities are still common in certain underdeveloped and inaccessible regions of the country. Fruits, tubers, flowers, leaves, and other plant components are eaten as primary or supplemental foods and utilised as medicines. Many phytochemical bioactive substances from the various medicinal plant sections have demonstrated numerous pharmacological properties in response to this increased interest [10–14], but relatively little research has been done to screen for microbial activity in flower [15].

1. MATERIAL & METHODS:

COLLECTION OF PLANT LEAF & EXFTRACTION:

In a shaker for three days, fresh flowers were ground with 80% ethanol before being filtered. In a sand bath, the filtrates were evaporated, and the dried extract was collected and kept in a refrigerator for later use.Depending on the flower utilised, the extract wasre-suspended in sterile distilled water at various quantities.

ANTIBACTERIAL ACIVITIES OF THE FLOWER EXTRACTS:

a) Bacterial stains:

Four bacterial strains that cause food poisoning disorders were used to assess the antibacterial potency of each plant extract. Staphylococcus aureus and Bacillus cereus are two strains of grampositive bacteria, whereas Escherichia coli, Salmonella typhi, and Pseudomonas aeruginosa are three types of gram-negative bacteria. The bacterial strains came from the MIET COMPUS , BAGHPAT BYPASS, MEERUT.

b) Inoculums Preparations:

In Mueller-Hinton agar slants, each bacterial strain was subcultured for a whole night at 35 °C. Using a spectrophotometer, the bacterial growth was harvested using 5 ml of sterile saline water, corrected for absorbance at 580um, and diluted to achieve a viable cell count of 10^7 CFU/ml.

S.no	Flowersname	Scientificname	family	Ethnomedical uses
1	Rose	*Rosa Rubiginosa*	*Rosaceae*	Treatment of diarrhoea, asthma, leukoderma , and inflamationof mouth.
2	Curry leaves	*Murraya Rutaceae*	*Rutaaceae*	To treat *digestive health, improve eyesight*
3	Anjeer	*Ficus carica*.	*Moraceae*	cardiovascular disorders, indigestion and diarrhoea and respiratory disorders.

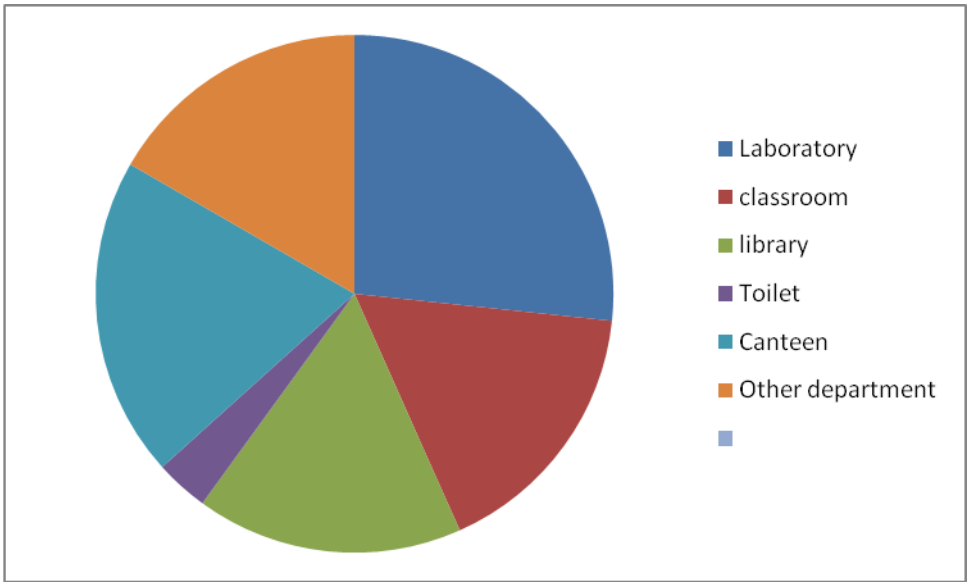
4	Guava	*Psidium guajava*	*Myrtaceae*	haemorrhoids, indigestion, cough,
5	Kanchan tree	*Bauhinia variegata*	*Fabaceae*	skin diseases, wounds, edema, dysentery, and ulcers.

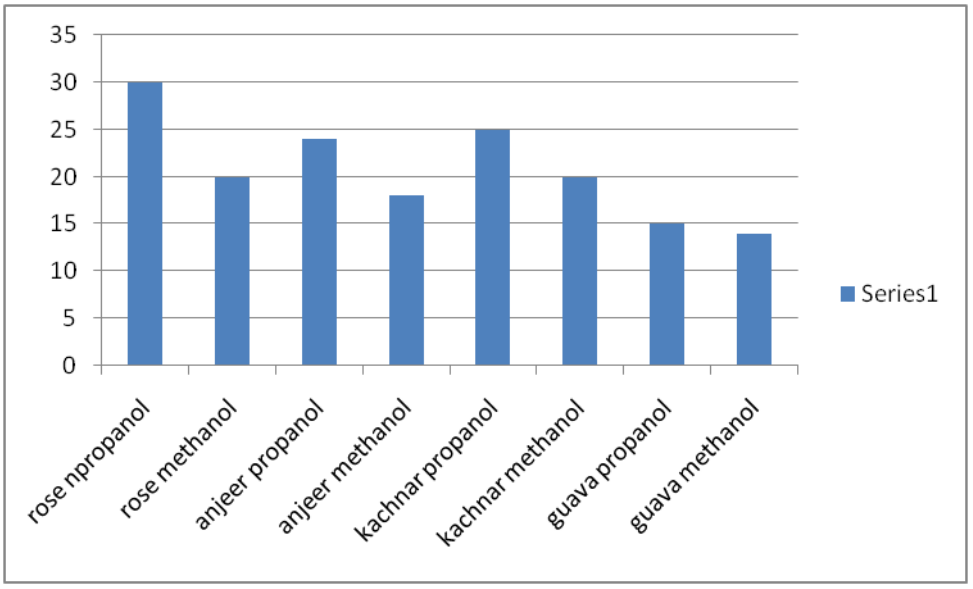
RESULTS & DISCUSSION:

.FIG-1 Zone of inhibition of flowers extract of calotropis procera against various pathogens using agar well diffusion essay. (a) Rose, (b) curry leaves (c) anjeer (d) guava (e)kanchan tree

A total number of 30 samples collected from door handles/ knobs (front and back handles/ knobs) of offices were subjected to culturing, microscopy, and biochemical techniques to investigate the presence of contaminants and to establish the identity of the microorganism present. 8 door handles/knobs were sampled in the laboratory out of which 5 were positive, 5 door handles/ knobs were sampled in account department out of which 3 were positive, 5 door handles/knobs were sampled in the provost office out of which 2 were positive, 1 door handle/knob was sampled in bursary and it was positive, 6 door handles/knobs were sampled in the Administrative offices out of which 3 were positive and 5 door handles/knobs were sampled in other offices out of which 4 were positive Table 1. In the distribution of door handles/knobs samples assessed (30) about 18 where positive for bacteriology which accounts for 60% of the samples Table 1. In the prevalence of bacteria isolates in contaminated door handles/knobs, the organisms isolated are Staphylococcus aureus 13(43.3%), E. coli 7(23.3%), Klebsiella pneumoniae 6(20.0%) and Bacillus species 4(13.3%) (Table 1&2).

Door Handles/Knobs.	No. of Samples (%)	Positive Samples (%)
Laboratory	8(26.7)	5(27.8)
classroom	5(16.7)	3(16.7)
library	5(16.7)	2(11.1)
Toilet	1(3.3)	1(5.6)
Canteen	6(20.0)	3(16.7)
Other department	5(16.7)	4(22.2)
Total	**30(100)**	**18(60)**





CONCLUSIONS

The presence of *Staphylococcus aureus, Bacillus spp., Escherichia coli and Klebsiella spp*., in the analyzed door handle samples is an indication that public contact surfaces such as door handles are often colonized by pathogenic microorganisms and may serve as a potential source of infections. It is therefore a necessity that Regular cleaning of door handles of classes may reduce the load of bacterial contamination. . Hand sanitizers or spray disinfectants should be made available in all classrooms, laboratories and toilets. Use of self-disinfecting technology on the door handles to minimize the attachment of microbes or to delay the development of biofilm. Use of the door handles made of a heavy metal such as silver or copper to reduce the microbial load. the use of rose, fig, guava leaf extract may have the potential to be used in disinfectant herbal sprays. Further studies are recommended to validate the results of the present study.

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