



Herbal Disinfectant as a Neem Extract, Tulsi, Pine Oil and Mixed

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Abstract:

Disinfectant substances are employed to neutralize the action of pathogenic organisms and prevent the spread of contagious or infectious disease. The efficiency of any disinfectant is due to its power of destroying, or of rendering inert, specific poisons or disease germs. Therefore antiseptic substances generally are to this extent disinfectants. The deodorizers, which act by oxidizing or otherwise changing the chemical constitution of volatile substances disseminated in the air, or which prevent noxious exhalations from organic substances, are in virtue of these properties effective disinfectants in certain diseases.

Keywords: disinfectant, herbal disinfectant, extracts.

Introduction:

In case of some deodorizers the destruction of the contagious is effected by the formation of new chemical compounds, by oxidation, deoxidation or other reaction, and in others the conditions favorable to life are removed or life is destroyed by high temperature. Among the first class, aerial or gaseous disinfectants, formic aldehyde has of late years taken foremost place. The vapor is a powerful disinfectant and deodorant, and for the surface disinfection of rooms, fulfils all requirements when used in sufficient amount. It acts more rapidly than equal quantities of sulphurous acid, and it does not affect colors. It is non poisonous though irritating to the eyes and throat. With the exception of iron and steel it does not attack metals. Disinfection by sulphurous acid fumes is of great antiquity, and is still in very general use, for the purpose of destroying vermin it is more powerful than formic aldehyde. Camphor and some volatile oils have also been employed as air disinfectants, but their virtues lie chiefly in masking, not destroying, noxious effluvia.

Need of Herbal Disinfectant

Meanwhile the chemical industry has moved into life sciences. Because of over emphasis on the use of chemicals to control infection due to microorganisms, more problems have been created rather than being addressed. Here disinfection will be treated mainly as it is used in the control and prevention of communicable disease.

Most other disinfectants use toxic chemicals to kill germs, which are unnecessary and unhealthy in nature, plants must defend themselves against germs and illness. Plants produce substances to kill germs and only germs, without banning the plants healthy tissue. In nature, plants produce essential oils to protect themselves from germs just like we human being who produce antibodies to protect ourselves. These essential oils have been used in medicine to kill germs for thousands of year.





Material and Methods:

The leaves of neem and tulsi fruits were collected and stored. For efficient extraction, the neem leaves were cut to pieces in the chipper. As the surface area increases, the extract obtained would be more concentrated. The crushed material was then sent to hydro distillation. The crushed material was boiled with proper ratio of water for nearly 1 hour to extract the ingredients such as azadirachtin, minbin etc. It is necessary that the unit should be closed, so the vapors should not go out of the system. Then resulting mixture i.e. neem extract with leaves, passed through the filter. The filtered extract was stored. The waste material obtained from this filter, is degradable and hence this process is ecofriendly. Similar procedure is followed for tulsi and then the extract was added to the mixing unit in proper composition as per requirement. The pine oil is added to the resulting mixture in proper amount to add aroma to the mixture. The above all extracts and other solutions were mixed in a mixing unit.

Results and Discussion:

It should be emphasized that no single microbiological test method is suitable for the evaluation of all germicidal chemicals for all applications recommended. Therefore, one must exercise care in selecting a test method for a specific chemical agent, so the results obtained will be meaningful and reproducible and provide themselves to some degree of practical interpretation.

It was shows the laboratory evaluation of chemical antimicrobial agents as:

- A. No growth or growth in broth
- B. Increased growth in broth as concentration of chemical agent is decreased.
- C. Increased growth in nutrient agar plates as concentration of chemicals agent is decreased.
- D. Inhibition of growth by chemical agent applied to center of inoculated medium in Petri dish zone of inhibition develops if compound is active.

The role of these raw materials is as follows. Neem extract contains azadirachtin as main component, which shows bactericidal activity. Tulsi extract contains eugenol as a main component, which also shows bactericidal activity and gives strength to the product. Pine oil has slightly antiseptic activity and has been used as a fragrance and flavor compound. So the final product is environmentally friendly. The testing were done on bacteria such as Salmonella typhi or staphylococcus aureus, as they have strong lifecycle as compared to other bacteria's and that's why they need more concentrated chemicals to destroy their lifecycle. The method that would be used for testing the sample against above mentioned bacteria is known as Phenol co-efficient test. After all the testing, the final results are shown in table no. 1 and table no. 2. The results obtained for 1ml of culture for a particular concentration having duration of about 22-24 hrs. The positive sign in the table indicated that, the particular sample and at particular concentration, there is growth of bacteria i.e. at that concentration, the sample do not have bacterial effect. Whereas the negative sign indicates that the bactericidal activity is present for particular sample at particular concentration. From the





result table no. 2, it is seen that sample C is giving the best result as compared to other samples. Sample C is giving bactericidal activity at and above 150 ul in 1 ml of culture. Accordingly sample D also giving bactericidal activity at and above 200 ul in 1 ml of culture. The material balance has done on the basis on sample C composition. The composition of Neem extract and Tulsi extract is variable where as Pine oil concentration in each sample is same. The variation was done to know which composition is exactly more effective. The variation in composition was shown in table. 1

Table. 1-

Composition	Neem Extract (ml)	Tulsi Extract (ml)	Pine Oil (ml)
Sample A	25	37.5	10
Sample B	37.5	25	10
Sample C	37.5	37.5	10
Sample D	60	20	10
Sample E	20	20	10

Table.2-

Concentration	C50	C100	C150	C200	C250
Sample A	+	+	+	-	-
Sample B	+	+	+	+	+
Sample C	+	+		-	-
Sample D	+	+	+	-	-
Sample E	+	+	+	+	+

References:

1. **Mahadeo K.M. and Vidya V.P**, Indian J. Pharma Sci., 65 (2), 113 (2003)
2. **Saudane A.R. Rudresh K, Satyanayan N.D. and Hiremath S.P.**, J. Ind. Pharma. Sci., 60, 379 (1998)
3. **Collins A.H.**, Microbiological Method II Ind Edition (Butherworth London) 1976.
4. **Arthnaton Skuggsand Morrison C.J.**, J. Clin Microbiology., 38, 2254 (2000)
5. **Raman N et. al.** J. Chem Sci., 116, 209 (2004)
6. **Kasim ANM Venkappayya D and Prabhu G.V.** J. Ind. Chem Soc., 76, 67 (1999)
7. **Barry A**, Procedure and Theoretical Consideration for Testing Antimicrobial agent in Agar Media, 5th Edition William and Wilkins, Baltimore (1991)

