



Antibiotic Resistant Staphylococcus sensitivity to Homeopathic drugs

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Abstract :

The primary goal of this study is to explore in vitro antibacterial activities of 3 homeopathic mother tinctures, Calendula Officinalis, Echinacea Augustifolia, and Vitex Negundo against antibiotic-resistant bacteria using adequate control. These mother tinctures have been used clinically in treating localized skin infections. Staphylococcus Aureus sample collected was resistant to Azithromycin, Clarithromycin and erythromycin. This experiment demonstrates anti-bacterial activity of Calendula, and Vitex against Azithromycin, Clarithromycin and Erythromycin-resistant Staphylococcus.

Introduction-

Aim of this study's is to show that homeopathy can successfully treat bacterial infections, especially in cases when conventional antibiotics are ineffective owing to resistance.

Antibiotic drug resistance is growing because of indiscriminate use of Antibiotics. Antimicrobial resistance (AMR) is among the top 10 global health threats ⁽¹⁾. Very few antibiotics that represent novel chemical classes have been introduced in the past 30 years ⁽²⁾ More than 1.2 million people – and potentially millions more – died in 2019 as a direct result of antibiotic-resistant bacterial infections. ⁽³⁾ Clinically homeopaths are already treating these infections with above medicines. This experiment is an In vitro Confirmation of the clinical use of Homeopathic drugs in antibiotic resistant infections. Infectious diseases are still one of the leading causes of morbidity and mortality in resource-limited settings, but epidemiological data on causative pathogens and antimicrobial resistance (AMR) distribution is scarce. ⁽⁴⁾ There is need for the implementation of integrated intervention approaches to address the gaps in reducing the emergence and spread of antibiotic-resistant bacteria. ⁽⁵⁾ There is evidence in the literature demonstrating that the use of Complementary and alternative medicine in general, and homeopathy in particular, can reduce recourse to antibiotics, with positive repercussions for strategies to combat antibiotic resistance. ⁽⁶⁾

Staphylococci are Gram-positive cocci 1µm in diameter. Staph. Aureus is notorious for causing boils, furuncles, styes, impetigo and other superficial skin infections in humans. It may also cause more serious infections, particularly in persons debilitated by chronic illness, traumatic injury, burns or immunosuppression.

Superbug(Resistant Antibiotics) crisis could get worse, killing nearly 40 million people by 2050.⁽¹³⁾

Materials and method:



Calendula officinalis is an herbaceous plant of the Asteraceae family that contains phytochemicals with antibacterial activity, including flavonoids, saponins, carotenoids, triterpenoids, and tannins.⁽⁷⁾ The phytochemical ingredients in this plant are polyunsaturated fatty acids, such as calendic acid, calenduline and oleanolic acid and other ingredients like calenduladiol, cofilodiol and manilladiol. It promotes healthy granulation and rapid healing.⁽⁸⁾



Vitex negundo has phytochemical constituents with antimicrobial activities⁽⁹⁾. It also contains casticin, artemisin, Guiene, Hydroxy benzoic acid, Nishidine, luteolin, isoorietin, chrysophenol⁽¹¹⁾



Echinacea angustifolia has been used for many years in traditional medicine as antiseptic. The physio-pathological effects of this plant include the increase of leukocyte activity, stimulation of phagocytosis, Tumor necrosis factor production by macrophages and increase of T and B cell activity, as well Interferon Y production by lymphocytes⁽¹⁰⁾

It contains Echinacoside, verbascoside, cynarin, tussilagine, quercetin, kemferol, anthocyanin⁽¹²⁾

It is valuable as a local cleansing and antiseptic wash.

1. Kirby-Bauer disk diffusion method

Staphylococcus aur. Culture was grown on Brain Heart Infusion broth. After culture plates are prepared 5 mm sterile culture disk was impregnated with Calendula Mother, Echinacea and Vitex Negundo Mother Tincture (each with drug strength 1/10) and was placed on Staphylococcus culture, incubated for 24 hours at 37 degree celsius. Zones of inhibition are read after 24 hrs and 48 hrs. Discs impregnated with ethanol concentration corresponding to each tincture are kept as control for comparing zone of inhibition. Antibiotic sensitivity is also done.

Antibiotic Sensitivity Reports

Teicoplanin (P)	Sensitive	Daptomycin (P)	Sensitive
Sparfloxacin	Sensitive	Linezolid (O,P)	Sensitive
Ofloxacin	Sensitive	Erythromycin	Resistant
Lomefloxacin	Sensitive	Vancomycin	Sensitive
Gatifloxacin	Sensitive	Tetracycline	Sensitive
Chloramphenicol	Sensitive	Minocycline	Sensitive
Norfloxacin (O)	Sensitive	Doxycycline	Sensitive
Nitrofurantoin	Sensitive	Clindamycin (O,P)	Sensitive
Ciprofloxacin	Sensitive	Clarithromycin (O,P)	Resistant
Levofloxacin	Sensitive	Oxacillin	Sensitive
Moxifloxacin	Sensitive	Trime-thoprim/Sulfamethoxazole (O,P)	Sensitive
Gentamicin	Sensitive	Azithromycin (O)	Resistant
Rifampin	Sensitive		
Ceftaroline	Sensitive		

Results and Findings



E-Ethanol Control
 AZ-Antibiotic
 E- Echinacea Augistofolia
 V-Vitex Negundo

E-Ethanol Control
 AZ-Antibiotic
 C- Calendula Officinalis
 V-Vitex Negundo

Remedy Name	Zone of Inhibition measurement
Calendula Officinalis	8mm
Echinacea Augustifolia	9 mm
Vitex Negundo	7 mm
Ethanol Control	6 mm

Conclusion-

Active chemical concentrations in homeopathy are often so low that there is no way to detect them. This presents an immense obstacle to performing assessments of their effectiveness employing conventional methods. It is not feasible to compare homeopathic dilutions with antibiotics in Vitro tests, in contrast to antibiotics, which are evaluated at quantifiable milligram levels and examined by techniques like disk diffusion studies. Thus, we compare it with the same volume of ethanol present in the mother tincture, which serves as the experiment's control. The bacteria in this study showed resistance to three antibiotics. Nonetheless, the application of *Calendula Officinalis*, *Echinacea Angustifolia* and *Vitex Negundo* has shown sensitivity exhibited by zones of inhibition. These findings demonstrate the efficacy of homeopathic remedies in treating infections resistant to antibiotics. By taking a comprehensive approach, we can combat antibiotic resistance more successfully and improve patient outcomes in the fight against bacterial infections.

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