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Dr. Nisanth Nambison
M.D (Hom), Associate
Professor, Department of
Surgery & Homeopathic
Therapeutics, Govt. Auto.
Homeopathic Medical College
& Hospital, Bhopal,
Madhya Pradesh, India

Dr. Smita Nisanth Nambison
BHMS, D. Pharma, DNHE,
President, SAAHAS Society of
Advanced Homeopathic
Sciences, Bhopal,
Madhya Pradesh, India

Prof. Dr. Q. Khan
MBBS, MD (Microbiology),
Head of Department of
Microbiology, Gandhi
Medical College, Bhopal,
Madhya Pradesh, India

Dr. Bhupendra Shrivatsav
MBBS, DA, DHMS, Managing
Director, L.B.S. Hospital,
Bhopal, Madhya Pradesh,
India

Correspondence
Dr. Nisanth Nambison
M.D (Hom), Associate
Professor, Department of
Surgery & Homeopathic
Therapeutics, Govt. Auto.
Homeopathic Medical College
& Hospital, Bhopal,
Madhya Pradesh, India

Antibacterial activity of homeopathic drugs *in vitro*

**Dr. Nisanth Nambison, Dr. Smita Nisanth Nambison, Dr. Q Khan and
Dr. Bhupendra Shrivatsav**

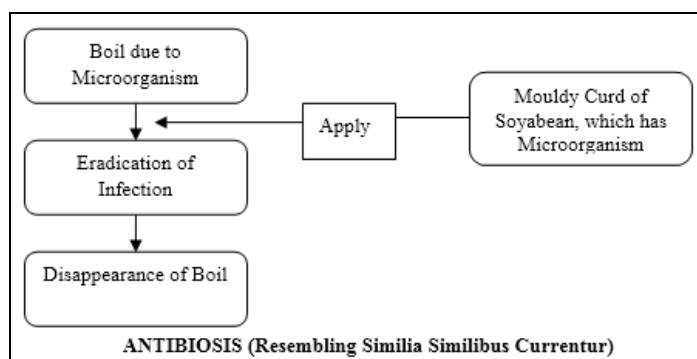
Abstract

Today the world is facing a threat of losing battle to micro-organisms in the wake of growing indiscriminate use of Antibiotics. Antibiotics are targeted at killing microorganism without any attempt to support and guide the immune system. But, homeopathic literatures show that infective diseases are very well handled with homeopathic drugs. The present experiment was directed at directly accessing the action of homeopathic drugs on the bacteria in laboratory with interesting outcomes. SIMILIBIOTIC: “Homeopathic drug having action similar to the pathogenic effect of microorganism is a Similibiolic.”

Keywords: Homeopathic drugs, Antibiotics, *E. coli*

Introduction

The concept and even the attempt to use substances derived from one organism to kill another organisms (antibiosis) are almost as old as the science of bacteriology. (e. g. mouldy curd of Soya bean applied to boils).



This in one-way or the other resembles Homeopathic law “Similia Similibus Currenter” i. e. likes are cured by likes. The Scientists Pasteur and Joubert 1877 confirmed this, they noted that anthrax bacilli grew rapidly when inoculated into sterile urine but failed to multiply and soon died if one of the “common” bacteria of the air was introduced in urine at the same time.¹

With the breakthrough invention of the antibiotic, Penicillin, which is produced by Penicillin Notanum a mould, shown by Alexander Fleming in 1928, death due to infectious disease drastically, came down. Since then newer antibiotics came into the market and proved to have excellent therapeutic potential in curing the pathogenic manifestations. But amidst all this, drug resistance has become a menace for medical science. Since adaptation is quality of life and by mechanism of mutation, transformation, transduction & conjugation many bacteria have become resistant to drug ^[1]. (Antimicrobials) It is proven beyond doubt that due to inappropriate and unethical use of antimicrobials, apart from drug resistance, generation of new mutant forms of non-pathogenic bacteria is posing a severe threat to the medical science (e. g. Non-pathogenic *E. Coli* has become pathogenic, once known for its symbiosis is now responsible for a wide range of GI & UI pathologies.)

Now host defence mechanism is the most important determinant of therapeutic effectiveness. Therefore, stimulating ones immune mechanism would be more appropriate tool in combating the raising incidence of infectious diseases ^[1], drug resistance and mutation.

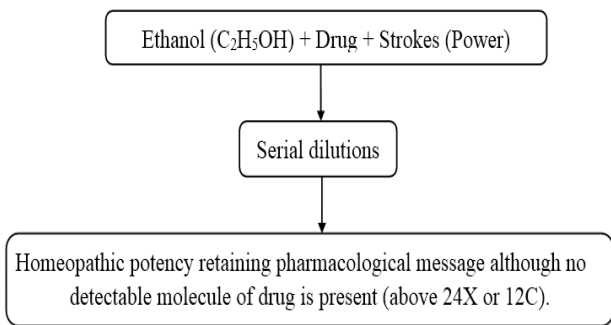
Although to kill bacteria is not our aim since bacteria are not cause of disease,

but disease lies in person himself (i. e. susceptibility) and bacteria is merely a secondary cause [2]. In the wonderful science of Homeopathy of defence mechanism is done by minuteness of Homeopathic drugs, as Arndt-Shultz law States that “Large doses kill; Moderate dose inhibit; and small doses stimulates”.

Chemical Nature of Homeopathic Drugs

Almost all Homeopathic drugs are made through serial dilutions of Alcohol i. e. Ethanol (C₂H₅OH) (Mol. wt. 46.07) and strength 83.1% w/w.⁵ Alcohol in strength 60% to 90% w/w is known for its antibiotic activity [1].

Potentised Homeopathic Drugs



Serial dilution reduces quantity of drug but immensely raises its quality.

Materials & Method

1. Collection of samples: Samples of infected discharges (urine, pus, bronchial lavage) were collected from Hamidia Hospital, Bhopal and subjected to culture.
2. Recording of Symptoms: Symptomatology of some cases were taken down and recorded for some available cases.
3. Selection of bacteria: Bacterial Strains which were highly sensitive to allopathic drugs were selected with the help of Culture & sensitivity.
4. Homeopathic drugs Selection: Those Homeopathic drugs which are frequently used for Urinary tract infection were selected and tabulated in Table- 1 with their potency. Since the hospital where this study was done had innumerable cases of UTI and most bacteria were isolated from urine.

5. Potency Selection: Lowest potency available, highest potency and common potency available were selected to evaluate their efficacy.
6. Control: Ethanol discs were prepared and kept as control. Each disc estimated to have 0.02ml of Ethanol (83.1% w/w).

Table 1: Homeopathic Drugs Used & Their Potencies

S. No.	Homeopathic drugs	Potency
1.	Apis Mellifica	Q, 30, 200, 1M, 10M, CM
2.	Arsenic Album	Q, 30, 200, 1M, 10M, CM
3.	Capsicum	Q, 30, 200, 1M, 10M, CM
4.	Cantharis	Q, 30, 200, 1M, 10M, CM
5.	Lycopodium	Q, 30, 200, 1M, 10M, CM
6.	Mercurius Solibiliris	30, 200, 1M, 10M, CM
7.	Medorrhinum	6X, 30, 200, 1M, 10M, CM
8.	Pulsatilla	Q, 30, 200, 1M, 10M, CM

7. Sensitivity Discs: Discs of 5mm diameter of Whatman filter paper no.41 of round shape were cut and properly sterilized [4].
8. Drug Impregnation of Discs: Discs were impregnated with 0.02cc of drug per disc.

Analysis of Bacterial Sensitivity to Homeopathic Drugs

1. Petri dish of sterile Mueller Hilton Agar (pH 7.4±0.2) was prepared.
2. Gram Staining was performed.
3. Incubated broth culture at (30±1 °C or 37±1 °C) after obtaining turbidity was standardised by Barium Sulphate Standard.
4. Inoculation: Now MHA plate was inoculated with the bacteria and was kept at room temperature for 5 to 10 minutes since confluent growth was desired.
5. Application of Homeopathic Disc: Homeopathic drugs sensitivity discs were taken with the help of flamed forcep and carefully placed on surface of medium and complete contact was made.
6. Incubation: Plates were incubated at 35°-37 °C for 18-20 hours.
7. Reading of growth inhibition zone: Measurement of outer margin of disc to the zone of disc to the zone of inhibition was done in millimeters with the help of measuring scale.
8. No. of cases =15.
9. Microorganism: *E. coli*, *Klebsiella*, *Proteus*, *Staphylococcus coagulase-ve.* (see Table No. 2)

Table 2

S. No.	Specimen for culture	Organism isolated
1.	Urine	<i>E. Coli</i> , <i>Klebsiella</i> , <i>Proteus</i> .
2.	Pus	<i>Klebsiella</i> , <i>Staphylococcus Coagulase-ve</i>
3.	Blood	<i>Staphylococcus Coagulase-ve</i>
4.	Bronchial Lavage	<i>E. Coli</i> .
5.	C. S. F.	<i>E. Coli</i>

It is a wonder that although Alcohol in the strength 60% to 90% is known for its antibiotic activity¹ Homeopathic drugs in the present study have shown bigger GIZ than alcohol, which were kept as controls. This indicates that GIZ of Homeopathic drug is not due to the effect of ethanol, but some other dynamic pharmacological message seems to be behind the formation of growth inhibition zone.

Result

Present study shows biggest growth inhibition zone of 3mm. which is considered to be resistant according to International standard, but in clinical practice it is generally considered to be weakly sensitive. Biggest growth inhibition shown by the medicine is given in Table No-3

Table 3: Biggest Zone of Inhibition in (mm)

S. No.	Potency	Q	30	200	1M	10M	CM
1.	Apis	1mm	2mm	2mm	1mm	2mm	2mm
2.	Ars. Alb.	2mm	2mm	2mm	2mm	1mm	2mm
3.	Capsicum	-	3mm	2mm	-	2mm	-
4.	Cantharis	2mm	2mm	1mm	2mm	2mm	2mm
5.	Lycopodium	2mm	-	2mm	2mm	-	3mm
6.	Mercurius Solublis	-	1mm	3mm	1mm	2mm	2mm
7.	Medorrhinum (6X)	2mm	1mm	-	-	3mm	2mm
8.	Pulsatilla	1mm	3mm	-	3mm	-	3mm

Ethanol showed GIZ of 1mm.

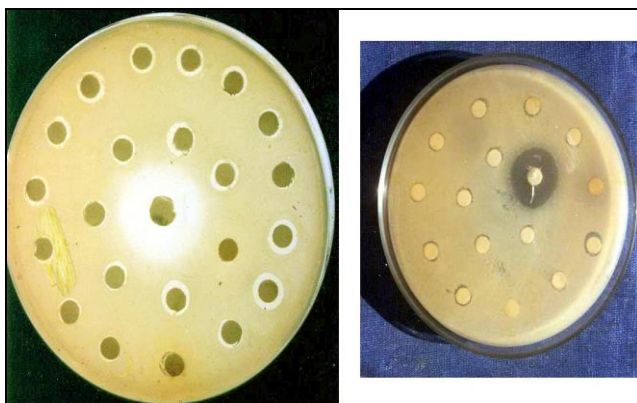
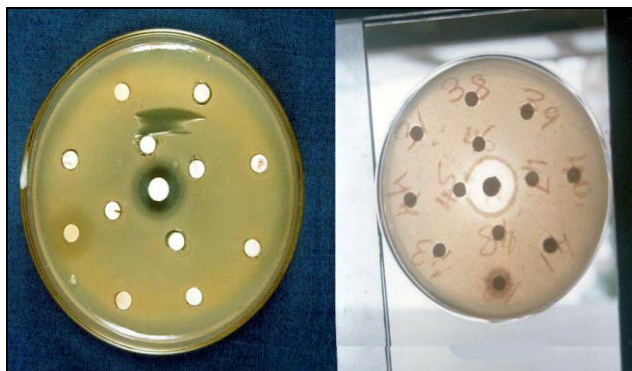
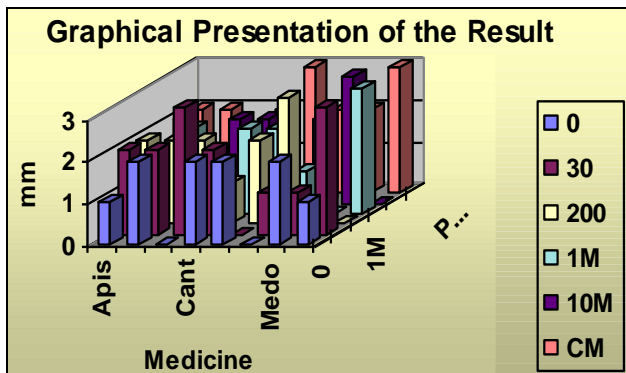


Plate 1: Petri dish of sterile Mueller Hilton Agar with bacterial culture showing GIF around Homeopathic discs.

Correlation of result with presentation of symptoms by the patient

Presentation of symptoms due to infection were ready taken down and redline symptom was the basis of selection of remedy. Now bacteria were subjected to culture to see sensitivity to Homeopathic drugs, to our surprise the medicine which was selected on the basis of redline symptoms was simultaneously effective on the bacteria *in vitro* in the form of growth inhibition zone around a

particular medicine (which was selected on the basis of similimum) in particular potency.

This makes us conclude that when totality of drug Pathogenesis is similar to pathogenesis of bacterial activity and when this drug is inoculated on bacteria *in vitro*, due to its similarity in antigenic property, drug inhibits the growth of bacteria. (Similia similibus curentur)

Discussion

Since the birth of Homeopathy, from the use of very first medicine Cinchona in potentised forms for many ailments including malarial fever. It is evident from the literature that Homeopathic medicines show high cure rate in cases of pathogenic manifestation. Authors clinical experimental experiences have also supported the view.

Present study shows that medicines are effective in dilutions where no drug molecule is detectable. (e. g. 30C, 1M, 10M, CM) and to such dilutions bacteria were weakly sensitive, where as allopathic drugs are of known quantity and comparatively shows a very big zone of sensitivity.

Probable Mechanism of Action

It is evident from abundant literatures, clinical verification and present studie that Homeopathic drugs act by:

1. Weak direct action on bacteria.
2. Indirect stimulatory action on host.

Direct Action

As seen in present study a medicine indicated on redline symptoms was also effective *in vitro* on bacteria in the form of its very weak sensitiveness.

Mechanism

1. A direct bactericidal action may be attributed to the property of alcohol to dehydrate cells [1].
2. A very weak antibiotic activity is probably due to similarity of the medicine of particular potency which resonantly matches with bacteria not in structure but in pathogenic power and hence creating environment surrounding bacteria and hence interfering with nutritional uptake by bacteria consequently causing disturbance in metabolism, protein synthesis, information transfer and eventually causing death of bacteria [1].

Indirect Action

In daily practice we generally give patient four globules or two grains absorbed in the medicine three times a day in a acute case say infection. This is:

2 drops/2 grains

Since, 1 drop =0.05 ml (approx.)

1 grain =65 mg

Therefore, 130 mg contains 0.102 ml of medicine

Therefore, 0.102x3 times a day =0.306 ml (daily dosage)

The medicine gets absorbed on surface of globule or medicine when given orally this globule (carbohydrate) is catabolised into simpler molecules by action of ptyalin in saliva then absorbed by oral mucosa and the medicine moves across membrane by passive transfer process i. e. molecules penetrate either by passage through aqueous channel in membrane or by dissolving in membrane substance and absorption through oral mucosa is rapid and passage through liver is avoided since liver metabolises alcohol to aldehyde¹ and whole medicinal configuration would be changed. Since blood concentration is 90% of medicine given orally i. e. 0.09 ml (approx.) is blood concentration.

Since Minimum Inhibitory Concentration (MIC) for bacteria to be weakly sensitivity is 0.02 ml *in vitro* and 4 times of MIC is achieved in the blood hence the direct action on bacteria.

Dosage being 0.102 ml (approx.) conventional regime this is the Minimum Stimulatory Concentration (MSC) for host which should be maintained by the physician as per requirement. Now this circulating medicine resonantly matches with bacterial pathogenicity for its property of producing similar symptoms (pseudo bacterial) as produced by bacteria i.e. antigenic property. But the minuteness and potentiation of drug diminishes pathogenic power of drug and when recognised by reticuloendothelial system (RES) in turn stimulates the host defense mechanism (Ardnt -Shulzt law) i. e. local, specific, non-specific cellular or humoral immunity to eradicate the infection. Similar to the mechanism of action of vaccines^[7].

Conclusion

It is a wonder that Homeopathic dilution of Ethanol or distilled water where in probability of finding even a single molecule of original drug is nil (after 24X or 12C) it is potent enough to inhibit growth of bacteria.

Overall review makes us conclude that Homeopathic drugs used in infections are not antibiotics but are Similbiotics (similar to bacteria) i. e. we administer the patient, medicine which is capable of producing similar symptoms in patient, as produced by bacteria hence stimulating defence mechanism of host which kills the bacteria. This is a unrevealed area of research where in more research needs to follow which would promise a new hope in cases where bacteria have become resistant to each every known antibiotic. Rampant unindicated, inappropriate and uncalculated uses of Antibiotics are doing greater harms than any good to the human and vets.

Here Similbiotics (Homeopathic) can play an instrumental role by not making the bacterial stain resistant, at the same time ensuring no mutation, thus preventing the society from hazardous new forms of infection.

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