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The Antibacterial Activity of Arsenicum Album 30 against Gram Positive and Gram Negative Bacteria The Observational Study

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Abstract
This observational study investigates the antibacterial efficacy of Arsenicum Album 30 a homeopathic remedy, against both Gram-positive and Gram-negative bacteria. The study aims to explore the potential inhibitory effects of Arsenicum Album 30 on bacterial growth and proliferation. The findings of this research may contribute to the development of alternative therapeutic strategies for bacterial infections, providing a new perspective on the antimicrobial properties of homeopathic preparations.

Keywords: Arsenicum album 30 1, Antibacterial activity 2, Gram-positive bacteria 3, Gram-negative bacteria 4, antimicrobial efficacy 5, In vitro study 6, CLSI guidelines 8, Prospective observational trial 9

1. Introduction

The emergence of antibiotic-resistant bacteria has become a pressing global health concern, necessitating the exploration of alternative antimicrobial agents. Homeopathic remedies, in particular, have garnered attention for their potential therapeutic benefits. Arsenicum album 30, a homeopathic preparation, has been traditionally used to treat various infections. However, its antibacterial efficacy against Gram-positive and Gram-negative bacteria remains largely un-investigated.

This observational study aims to evaluate the in vitro antibacterial activity of Arsenicum album 30 against a range of bacterial strains, including both Gram-positive and Gram-negative bacteria. By exploring the antimicrobial properties of Arsenicum album 30, this research seeks to contribute to the development of novel therapeutic strategies for bacterial infections.

In recent years, homeopathic remedies have garnered attention for their potential therapeutic benefits, including antimicrobial properties. Arsenicum Album 30, a homeopathic preparation, has been traditionally used to treat various infections, including those caused by bacteria.

Despite its traditional use, the antibacterial efficacy of Arsenicum Album 30 remains largely un-investigated. Recent studies have demonstrated the antimicrobial potential of various homeopathic preparations, suggesting that Arsenicum Album 30 may also possess antibacterial properties[1]. This study aims to investigate the antibacterial activity of Arsenicum Album 30 against a range of bacterial strains, including both Gram-positive and Gram-negative bacteria.

Since antibiotics are the only possible treatment, and their efficacy against many bacterial infections is declining, much attention has been paid to the discovery of a new generation of drugs.

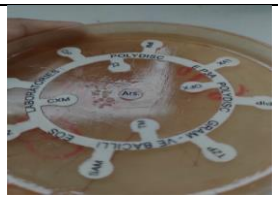
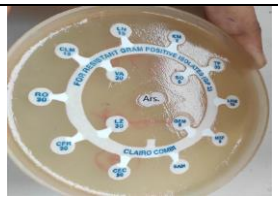
Study setting: Samples Are collected and Procedures done in Microbiology Laboratory under the guidance of M.D Pathologist and Microbiologist.
Inclusion Criteria: All isolated Bacteria from various Samples.
Study Duration: 10 days.
Study Design: Pilot Study.
Selection Of Tool: CLSI (Clinical And laboratory standards Institute) Guidelines for measurement of zone of inhibition.

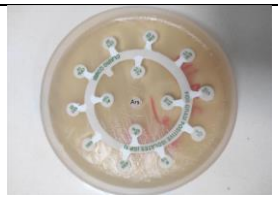
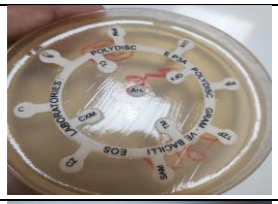
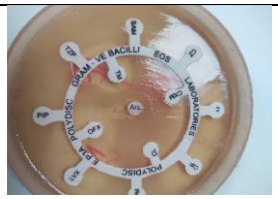
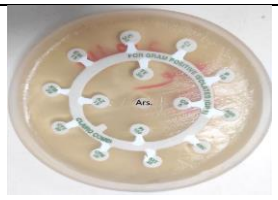
Brief Procedure
Bacteria strain is isolated from various samples like sputum abscess, pus, urine stool etc.
Bacterial strains are incubated on nutrient and Mc-Conkey agar at 37^0c within 18-24 hours.
Bacteria were specified as per their biochemical test results, Gram stain, and Colony morphology.
Arsenicum album 30 sensitivity tests were done on Mueller Hinton agar media using isolated bacterial broth and adding one drop of Arsenicum album 30 (potency) dilution on the agar media this will Kept in incubator for 24 hrs.
Zone of inhibition was measured using the measurement scale.
Data Collection: Bacteria strain is isolated from various samples like sputum abscess, pus, urine stool etc.

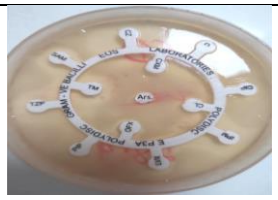
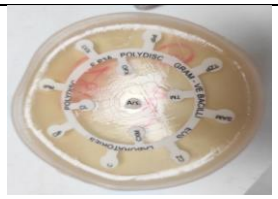
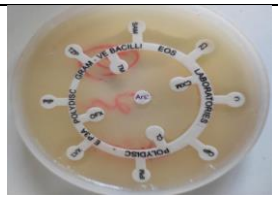
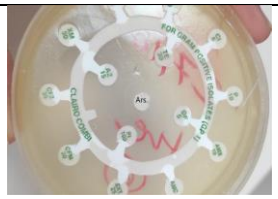
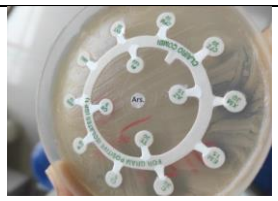
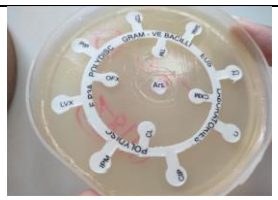
Outcome Assessment
- Those organisms have given inhibition zone 22 been considered as sensitive.
- Those did not possess inhibitory zone were considered as resistant to Arsenicum Album 30.

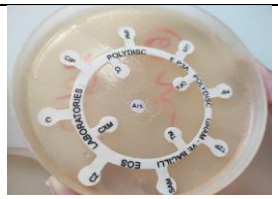
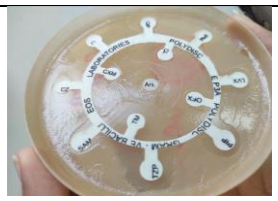
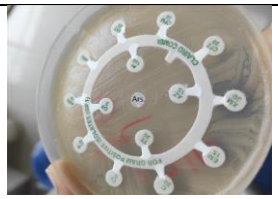
Data Analysis - Reference strains used for bacterial culture.
- Staphylococcus aureus
- Pseudomonas
- Klebsiella.
- E-coli.
- Enterococcus
- Citrobacter

Sr.No.	Name of bacteria (gram positive/ negative)	Sample	Duration of sensitivity	Zone of inhibition	Resistance	Petri Dish with Arsenic album as Antibacterial Agent.
1.	Pseudomonas (gram negative)	Pus	24 hours	22	No	

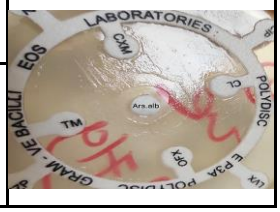
2.	Staphylococcus aureus (gram positive)	Abscess	24 hours	22	No	
3.	E. coli (gram negative)	stool	48 hours	22	No	
4.	Citrobacter (gram negative)	Urine	24 hours	22	no	
5.	E. coli (gram negative)	Urine	48 hours	22	No	
6.	E. coli (gram negative)	Stool	24 hours	22	No	
7.	Pseudomonas aeruginosa (gram negative)	Pus	24 hours	22	No	
8.	Klebsiella (gram negative)	Pus	48 hours	22	No	
9.	E. coli (gram negative)	Urine	24 hours	22	No	

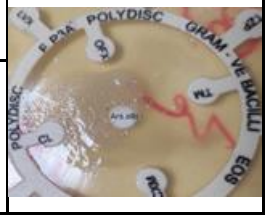
10.	Pseudomonas aeruginosa (gram negative)	Pus	24 hours	22	No	
11.	Pseudomonas aeruginosa (gram negative)	pus	24 hours	22	No	
12.	E. coli (gram negative)	Urine	24 hours	22	No	
13.	Klebsiella (gram negative)	Sputum	Not sensitive	-	Resistant	
14.	Enterococcus (gram positive)	Urine	24 hours	22	No	
15.	Enterococcus (gram positive)	Urine	24 hours	22	No	
16.	Klebsiella (gram negative)	Urine	Not sensitive	-	Resistant	
17.	Pseudomonas aeruginosa (gram negative)	Pus	24 hours	22	No	

18.	E. coli (gram negative)	Urine	24 hours	22	No	
19.	Klebsiella (gram negative)	Urine	Not sensitive	-	Resistant	
20.	E. coli (gram negative)	Urine	24 hours	22	No	
21.	Enterococcus (Gram positive)	Urine	Not sensitive	-	Resistant	
22.	Pseudomonas aeruginosa (Gram negative)	Pus	24 hours	22	No	
23.	Pseudomonas aeruginosa (gram negative)	Pus	24 hours	22	No	
24.	E.coli(gram negative)	Urine	24 hours	22	No	
25.	Pseudomonas aeruginosa (gram negative)	Pus	24 hours	22	No	
26.	E. coli (gram negative)	Urine	24 hours	22	No	

27.	Klebsiella (gram negative)	Urine	48 hours	22	No	
28.	Citrobacter (gram negative)	Urine	24 hours	22	No	
29.	E. coli (gram negative)	Urine	24 hours	22	No	
30.	E. coli (gram negative)	Urine	24 hours	22	No	

Findings –

Bacteria	Number of Bacteria Showing Sensitivity	Time [Hrs]	Image
Gram Positive	3	24	
Gram Negative	23	24/48	

Bacteria	Number of Bacteria Showing Resistance	Time [Hrs]	Image
Gram Positive	1	24	
Gram Negative	3	24/48	

Discussion:

1) The study gives scientific validation that Homeopathic medicines Arsenicum album 30 shows significant sensitivity i.e. 86.6% against the Gram Positive and Gram Negative Bacteria.

- 23 Bacteria's showing sensitivity within 24 hours and 3 bacteria's showing sensitivity within 48 hours.
- 4 bacteria's shows the resistance to Arsenicum album30 which includes Enterococcus (1) and Klebsiella (3).

Homoeopathy is a system of medicine based on the law of Similia – Similia Similibus Curenture i.e like cures like. This law suggests that a substance causing symptoms in a healthy person can, in very small doses, treat similar symptoms in a sick person.

This study shows the clinical correlation between the signs and symptoms produced by the bacteria's which are sensitive to Arsenicum album30 and sign and symptoms produced by Arsenicum album during its drug proving as follows.[2]

Bacteria	Disease activity	Arsenic Album Symptoms
Pseudomonas aeruginosa	Suppurative otitis media, bed sore	Offensive - otorrhea, ulcers.
Staphylococcus aureus	Abscess, cellulitis, food poisoning	Abscess gangrenous diarrhea, hematemesis
E. coli	Pyelonephritis, hemolytic uremia	Urine dark brown, hematuria with coagula
Klebsiella	UTI, Gelly like mucous	Hematuria, dysuria
Citrobacter	UTI, brain abscess	Uremia with brain edema
Enterococcus	Cystitis, prostatitis	Strangury

Result

1. It shows that the Arsenicum album 30 is potent antimicrobial against Gram positive and Gram-negative bacteria
2. Arsenicum album showed significant activity against the bacterial growth within 24 hours such as in:

- Pseudomonas (sputum) (5)
- E. coli (Stool) (Urine) (7)
- Staphylococcus aureus (abscess). (1)
- Klebsiella (4)
- Citrobacter (1)
- Enterococcus (2)

3. shows activity within 48 hours in E. coli (Urine) (1).

Conclusion

- Arsenicum album 30 is Potent Antibacterial against Gram Positive and Gram-Negative bacteria.
- 23 Bacteria's showing sensitivity within 24 Hrs; and 3 Bacteria's showing sensitivity within 48Hrs.
- The disease's sign & symptoms produced by bacteria that are sensitive to Arsenicum album 30, that same sign & symptoms produced by arsenic album during its drug proving.

Reference

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