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Antimicrobial activity of *Abhraka Bhasma* prepared with *Gomutra*, for evaluation of its broad spectrum activity

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ABSTRACT

The utility of Ayurvedic science is to maintain the health and cure the diseases of patient. *Rasaushadis* are unique formulations, which are easily administered, assimilated and absorbed in the body and quick in action. Harmful micro-organisms are the world's major causes of morbidity and mortality. Thus, in such instance *Abhraka Bhasma* and *Gomutra* both explained as "*Krimihara*" in classical texts. To ensure their property present study has been conducted.

Key words: *Abhraka Bhasma*, *Gomutra*, *Antimicrobial activity*.

INTRODUCTION

Infection and immunity involve interaction between the body (host) and the infecting organisms. These micro-organisms cause plenty of infectious diseases in human beings.^[1]

To overcome such conditions, many antibiotics and antifungal are heavily prescribing by medical practitioners, these may cause many hazards to the body such as, nausea, vomiting, gastric irritation, metallic taste, destruction of gastric flora and anaphylactic reactions causing even death.^[2]

Antimicrobial agents are among the most commonly used and misused of all drugs. The inevitable consequence of the widespread use of antimicrobial agents has been the emergence of antibiotic-resistant

pathogens, fueling an ever-increasing need for new drugs.

However, the pace of antimicrobial drug development has slowed dramatically, with only a handful of new agents, few of which are novel, being introduced into clinical practice each year.

It is moral responsibility of an Ayurvedic scholar to search for an ideal remedy from the treasures of the therapeutics, in our classics *Rasa Ratna Samuchhaya*, *Rasa Kamadhenu* and *Bhava Prakasha Nighantu* we do find *Abhraka* as *Krimihara*, also *Rasatarnginikara* explained about 60 drugs in *Maraka Gana* for *Abhraka Bhasma*, where *Gomutra* is one among them.

So, both *Abhraka* and *Gomutra*^[3-6] act as *Krimihara*.^[7-10] When *Abhraka Bhasma* prepared with *Gomutra* as *Maraka Dravya*, the *Krimihara* property will be enhanced.

MATERIALS AND METHODS

To evaluate the Antimicrobial activity of *Abhraka bhasma*, following materials are used.

Materials

A) Drugs

1. *Abhraka Bhasma*
2. Ciprofloxacin
3. Clotrimazole

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B) Micro-organisms**Bacteria**

- Staphylococcus aureus
- Staphylococcus albus
- Pseudomonas auregenosa
- Escherichia coli

Fungi

- Candida albicans
- Candida tropicalis

METHODS

Antimicrobial activity is a technique in which response of an organism to a particular antimicrobial agent can be established. Many methods are employed for evaluation of antimicrobial activity of a drug. In the present study cup plate method was selected. It is simple and relatively inexpensive which makes it still the method of choice for the average laboratory.

Two gram +ve (Staphylococcus Aureus, Staphylococcus Albus), Two gram -ve (Escherichia Coli, Pseudomonas Aeruginosa) bacteria and two fungi (Candida albicans, Candida tropicalis) were selected for the study. Because these micro-organisms occur in large number in most natural environments.

These are the major causative factors for many infectious diseases like respiratory tract infection, fever, diarrhoea, dysentery, skin disorders etc.

Each kind of micro-organism has specific growth requirements; most of the microbes can be grown in culture medium in the laboratory. In the present study Nutrient broth is chosen as a culture media for bacteria and Potato dextrose agar media for fungai. These two are the basic media for cultivation of respective organisms.

Growth of organism was confirmed by turbidity of the media.

Agar universally used as a solidifying agent, is common for bacteria and fungi, which has not been replaced by any other agent from 100 years.

RESULTS

Organism	CT (DMSO)	CF (100 mcg)	CM (100 mcg)	AB (100 mcg)	AB (200 mcg)
Staphylococcus	01	25	--	18	20

Aureus					
Staphylococcus Albus	01	18	--	16	25
Escherichia Coli	01	25	--	18	22
Pseudomonas Aeruginosa	01	30	--	05	06
Candida Albicans	00	--	10	03	05
Candida Tropicalis	00	--	30	05	08

CT - Control, CF - Ciprofloxacin, CM - Clotrimazole, AB - Abhraka Bhasma.

Shows zone of inhibition (in mm) of Control (DMSO), Ciprofloxacin and Clotrimazole in comparison with sample *Abhraka Bhasma*.

Note:

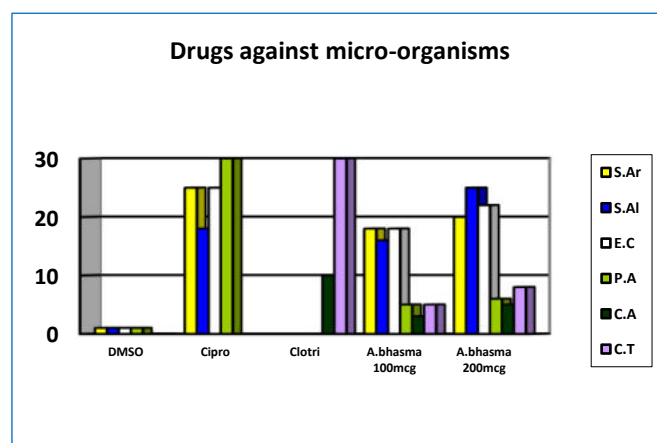
DMSO = Dimethyle Sulfoxide,

Resistant: 15 mm OR less

Intermediate: 16 mm – 20 mm

Sensitive: 21 mm OR more

- From the results, the bacteria *Staphylococcus albus* shown more sensitivity than that of Ciprofloxacin and *Escherichia coli* has shown sensitivity, *Staphylococcus aureus*- intermediate and *Pseudomonas auregenosa* shown resistant against 200mcg potency *Abhraka Bhasma*.



- The bacteria *Staphylococcus aureus*, *Staphylococcus albus* and *Escherichia coli* have shown - intermediate sensitivity and *Pseudomonas auregenosa* shown resistant against 100mcg potency *Abhraka Bhasma*.
- The Fungi *Candida albicans* and *Candida tropicalis* both have shown resistant against 100mcg potency *Abhraka Bhasma* and 200mcg potency *Abhraka Bhasma*.
- Variations in the response of the micro-organisms may be due to the % of trial drug diffusion, which is much necessary to exhibit the drug action is questionable. It is clear that *Abhraka Bhasma* has shown good results against bacteria except *Pseudomonas auregenosa*.
- *Abhraka Bhasma* has not shown antifungal activity, but has a definite comparable antibacterial activity thus *Abhraka Bhasma* can be our answer to the antibiotics in the management of infectious conditions.

DISCUSSION

By considering all the *Gunakarmas* of the trial drug, one can assess that both *Abhraka* and *Gomutra* acts as *Krimihara*. When *Abhraka Bhasma* prepared with *Gomutra* as *Maraka Dravya*, the *Krimihara* property will be enhanced, the hypothesis claims. Keeping all the mentioned points in the view it has been decided to take up a work on Antimicrobial activity of *Abhraka Bhasma* prepared with *Gomutra*, for evaluation of its broad spectrum activity.

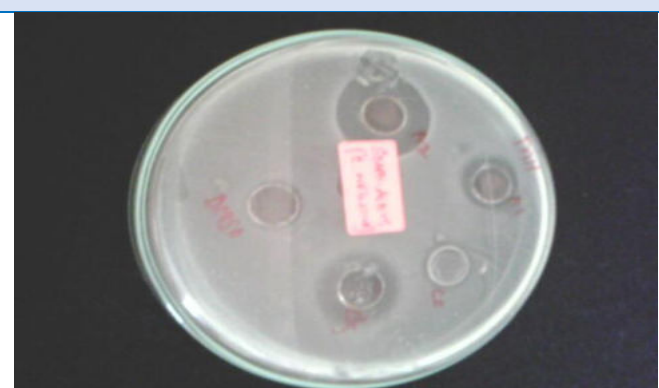
CONCLUSION

Abhraka Bhasma has been mentioned as *Sarva Vyadhihara* describing its broad-spectrum therapeutic uses. It is concluded that *Abhraka Bhasma* has shown good results against bacteria except *Pseudomonas auregenosa* and has not shown antifungal activity, but has a definite comparable antibacterial activity. Thus *Abhraka Bhasma* can be our answer to the antibiotics in the management of infectious conditions.

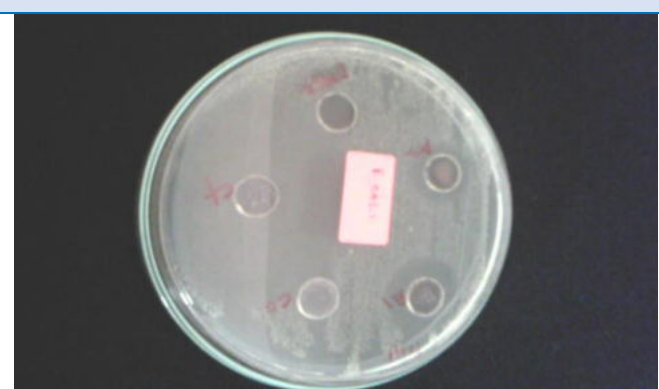
Photos showing suspension of Ciprofloxacin, Clotrimazole and *Abhraka Bhasma* in DMSO solution.



Photograph 1: Staphylococcus Aureus



Photograph 2: Staphylococcus Albus



Photograph 3: Escherichia Coli



Photograph 4: Pseudomonas Aeruginosa



Photograph 5: Candida Albicans



Photograph 6: Candida Tropicalis

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