COMPARATIVE ANTIMICROBIAL ACTIVITY OF SHODHITA AND MARITA SHILAJATU

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ABSTRACT
Shilajata is a herbomineral compound with many beneficial therapeutic properties. It is stated in charaka that, there is no such Sadhya roga by which the effect of Shilajatu cannot be treated. Shilajatu is beneficial in all medicinal uses with all scientific manner when consumed eradicates whichever be the disease and strengthens the bala of the person. Shilajata is more effective than several currently available clinically efficacious immunomudulators. Benefits of Shilajatu are mainly antiaging, good aphrodisiac, Anti inflammatory, antiallergic and good antimicrobial agent. In the rashashastra texts, it is one among maharasa and exists in two types as 1-Gomutra Gandhi Shilajatu and 2- karapoora Gandhi Shilajatu. Among both of them gomutra Gandhi Shilajatu is consider superior and used for the preparation of medicine. The Samhita have classified into four (charaka) and six (susruta), Depending on the presence of metal ore found in the mountains from which the Shilajatu is collected. In ancient texts numbers of krimighna and kusthghna dravyas are explained. The word krimi is compared to various types of micro organisms in contemporary science, which include bacteria and fungi etc. In ayurveda many herbal, mineral and herbomineral drugs are mentioned that are having antimicrobial
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properties. Shilajatu being one of the rasadravya explained in texts possessing krimighna and kusthghna properties. Shodhita shilajatu, marita shilajatu, Benzathine penicillin (antibacterial), Flucanazole (antifungal), distilled water formed the drug materials and 4 strains of bacteria & 2 strains of fungi, agar media, chemicals & glass wears formed the materials for study. Cup plate method was followed.

**KEYWORDS:** Shodhita Shilajatu, Marita Shilajatu, Antimicrobial Activity, Cup Plate Method, Krimigna.

**INTRODUCTION**

Infectious diseases are caused by pathogenic microorganisms like bacteria, viruses, fungi, protozoa and multi cellular parasites. These diseases are also called as communicable diseases or transmissible diseases. Since they are be transmitted from one person to another via a vector or replicating agent. The number of multi drug resistance microbial strains and the appearance of strains with reduced susceptibility to antibiotics are continuously increasing. This increase has been attributed to indiscriminate use of broad spectrum antibiotics, organ transplantation and ongoing epidemics of HIV infection.[1,2]

The management of infection and its consequence therefore requires a combination of action to reduce or inhibit the infecting agents. This may involve the antimicrobial therapy.[3]

Modern medicine having single target in its action having multidimensional side effects but ayurvedic formulations having multidimensional therapeutic activity with negligible or no side effects. Therefore, there is a need to develop newer antimicrobial drugs which are safe, effective and economic to the patients.

Shilajatu being one of the rasadravya explained in all most all rasagrantha as one of the maharasa.[4] Shilajatu is having multi dimensional therapeutic activity explained in Charaka samhita.[5] Susrut samhita[6], Astanga hraduya[7], and in almost all rasagranthas. Hence to assess krimigna property **shodhita & marita shilajatu** samples were subjected to antimicrobial activity.

**MATERIALS AND METHODS**[8]

**Materials**

**Drugs:** Shodhita shilajatu, marita shilajatu, Benzathine penicillin, Flucanazole, Distilled water.
Micro organisms

**Bacteria:** Escheria coli, Staphylococcus Aureus, Pseudomonas aeruginosa, Klebsiella species.

**Fungi:** Candida albicans, Aspergillus niger.

Method

**Pharmaceutical study**

Shodhana of Shilajatu[^9]: RRS 2/110-112

Marana of shilajatu[^10]: RRS 2/113

**Anti microbial activity[^11-12]**

Anti microbial activity was carried out according to CUP PLATE Method and it was conducted at BLDEA’s College of Pharmacy Vijayapur.

**INTERPRETATION OF RESULTS**

Results were interpreted by measuring the zone of inhibition shown by samples on test organisms.

a) Sensitive (S) Zone – Diameter wider than 8mm.

b) Intermediate (I) Zone – Diameter between 6mm to 8mm.

c) Resistant (R) Zone – No zone of inhibition or diameter less than 6mm.

**OBSERVATIONS AND RESULTS**

Table No.1: Shows zone of inhibition (in mm) of 1%, 2%, & 5%, solutions of shodita and marita shilajatu in comparison with standard & Control drugs.

<table>
<thead>
<tr>
<th>Soln of drugs</th>
<th>Zone of inhibition in mm on test organism</th>
<th>Bacterial organism</th>
<th>Fungal organism</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>E.C.</td>
<td>S.A.</td>
</tr>
<tr>
<td><strong>Shodhita shilajatu</strong></td>
<td></td>
<td>1%</td>
<td>20 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2%</td>
<td>24 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5%</td>
<td>28 mm</td>
</tr>
<tr>
<td><strong>Maritha shilajatu</strong></td>
<td></td>
<td>1%</td>
<td>12 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2%</td>
<td>14 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5%</td>
<td>22 mm</td>
</tr>
<tr>
<td><strong>Standard drug</strong></td>
<td></td>
<td>B.P</td>
<td>28 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fcn</td>
<td></td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Bacterial organism:** E.C: Escheria coli S.A: Staphylococcus Aureus P.A: Staphylococcus Aureus K.S: Klebsiella species.
**Fungal organism:** C.A: Candida albicans A.N: Aspergillus niger.

**DISCUSSION**

1%, 2% & 5% solutions of shodita and marita shilajatu were tested against 6 strains of microorganisms for antimicrobial activity. 0.5 ml of Shodhita shilajatu 1% (5000μg), 2% (10000μg) & 5% (25000μg / 0.5 ml) and 0.5 ml of Marita shilajatu 1% (5000μg), 2% (10000μg) & 5% (25000μg/ 0.5 ml), Benzathine penicillin was used as the standard drug for antibacterial activity (1250 μg/0.5ml). Flucanazole was used as the standard drug for antifungal activity (500 μg/0.5ml).

0.5ml of each test drug solutions i.e. shodita and marita shilajatu, 1 control drug solution (distill water) and 2 standard drug solutions (Benzathine Penicillin & Flucanazole) were injected into the bore, having the maximum capacity 0.5ml.

On bacteria & fungi 0.5ml of the 1%, 2% & 5% test solution of shodita and marita shilajatu were shown zone of inhibition against the micro organisms, i.e Escheria coli, Staphylococcus Aureus, Pseudomonas Aeruginosa and Klebsiella species and fungi, i.e, Candida albicans & Aspergullus niger.

On bacteria, 0.5ml solution of Benzathine penicillin shown the zone of inhibition against Escheria coli, Staphylococcus Aureus, Pseudomonas Aeruginosa and Klebsiella species. On fungi 0.5ml solution of Flucanazole shown the zone of inhibition against Candida albicans and Aspergullus niger. On bacteria & fungi 0.5ml of control drug (distilled water) has not shown any zone of inhibition against any of micro organisms, i.e Escheria coli, Staphylococcus Aureus, Pseudomonas Aeruginosa, Klebsiella species, Candida albicans & Aspergullus niger.

**CONCLUSION**

Different % of solutions (1%, 2% & 5%) shodita and marita shilajatu were subjected for antibacterial and antifungal activity with standard drugs Benzathine pencillin (antibacterial) and Flucanazole (antifungal). 5% Shodita shilajatu have demonstrated significant antibacterial and antifungal activity than Benzathine Penicillin (standard antibacterial drug), Flucanazole (standard antifungal drug) and marita shilajtu. Thus these research study on shilajatu has provided scientific evidence base for krimigna and kusthagna property of Shodhita shilajatu mentioned in classical texts.
REFERENCES
5. Pandit kashinath shastri & Dr.Gorakshnath: Charaka samhita, Chikitsa sthana Rasayanadhyaya shloka no 60-65 page no.48-49. By Varanasi chaukamba publisher.
8. Dr.R.S.Sarashetti & Dr Anita kumara: dissertation submitted to RGUHS in 2014 entitled “Screening of antimicrobial activity of shodhita, Marita & Satwapatita Shilajitu.”
11. Miller, Ruth E & Rose, S.Brandt. 1939- ‘Studies with the Agar Cup Plate method’