COMPARATIVE ANTIMICROBIAL ACTIVITY OF SHODHITA, MARITA AND SATWAPATITA SHILAJATU

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ABSTRACT

Charaka has strongly advocated the multidimensional property of shilajatu. It is said that the administration of shilajatu with proper time and with proper anupan cure almost all the curable diseases in the world. To prove this thing acharaya charak has coated that “Na so asthi rogo bhuv sadhyarupa shilahva ya na jayet prashyI tatkalyogevidhibhi prayukta swasthsya chorcha vipula dadati”. In ayurveda the word krimigna and kushtigna properties can be compare to antibacterial and antifungal that is (antimicrobial). The word krimi is campared to various types of micro organismin in contemporary science, which include bacteria and fungi etc. The ancient physician were well acquainted with the disease manifested from micro-organisms. These are exogenous or outside the body, but cause the disease when they enter into the body. These krimis are causative factors for the manifestation of so many kind of diseases. Shodhita shilajatu, marita shilajatu, satwapatita 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:** Charaka multidimentional Cup plate method was followed.

**INTRODUCTION**

Shilajatu is considered as rasa dravya categorized under maharasa by rasa vagbhata.\[^1\] It is indicated for many diseases including sthoulya, kusta, prameha, medogna.\[^2\] Inspite if this acharaya charak has coated that “Na so asthi rogo bhuv sadhyarupa shilahva ya na jayet prashyl tatkalyogvidhibhi prayukta swasthsya chorcha vipula dadati”,\[^3\] The administrations of shilajatu at proper time with proper anupana cure almost all the curable diseases in the world.

Though maran, satwapatana procedures are being mentioned to shilajatu\[^4\] but in almost all preparations as an ingredient use of shodhit shilajatu is recommended and it is followed.

Pharmaceutical form of medicine point of view bhasma is considered as shreshta because of its less therapeutic dose, not having particular test, fast acting result but use of shilajatu in the bhasma form and also in satwpatana form are rare. After going through literature shodhita shilajatu is used as an ingredient in most of the preparations.

It may be due to presence of phytochemicals detected in shodhita shilajatu and those are absent in marita & satwapatita shilajatu. During puta process of marana stage they may be burnt out.\[^5\] Hence to get its maximum therapeutical benefits, use of shodhita shilajatu is observed. In this regard to evaluate the antimicrobial property of shodhita, marita & satwapatita shilajatu to provide evidence for its krimigna property, shodhita, marita and satwapatita shilajatu were prepared and subjected to comparative anti microbial activity.

**MATERIALS AND METHODS\[^5-6\]**

**Materials**

**Drugs:** Shodhita shilajatu, marita shilajatu and satwapatita 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\(^7\): According to RRS 2/110-112

Marana of shilajatu\(^8\): According to RRS 2/113

Satwapatana of Shilajatu\(^9\): According to RRS 2/115-116

**Anti microbial activity\(^{10-11}\)**

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.

**OBSERVATION AND RESULT**

Table No. 1: Shows zone of inhibition (in mm) of 1%, 2%, & 5%, solutions of shodita, marita & satwapatita 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>E.C</td>
<td>S.A</td>
<td>P.A</td>
</tr>
<tr>
<td>Shodhita shilajatu</td>
<td>1%</td>
<td>20 mm</td>
<td>16 mm</td>
</tr>
<tr>
<td></td>
<td>2%</td>
<td>24 mm</td>
<td>20 mm</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>28 mm</td>
<td>26 mm</td>
</tr>
<tr>
<td>Maritha shilajatu</td>
<td>1%</td>
<td>12 mm</td>
<td>14 mm</td>
</tr>
<tr>
<td></td>
<td>2%</td>
<td>14 mm</td>
<td>16 mm</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>22 mm</td>
<td>24 mm</td>
</tr>
<tr>
<td>Satwapatita shilajatu</td>
<td>1%</td>
<td>18 mm</td>
<td>16 mm</td>
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<tr>
<td></td>
<td>2%</td>
<td>22 mm</td>
<td>22 mm</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>26 mm</td>
<td>24 mm</td>
</tr>
<tr>
<td>Standard drug</td>
<td>B.P</td>
<td>28 mm</td>
<td>24 mm</td>
</tr>
<tr>
<td></td>
<td>Fcn</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Control</td>
<td></td>
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</tbody>
</table>


DISCUSSION
1%, 2% & 5% solutions of shodita, marita & satwapatita shilajatu were tested against 6 strains of micro organisms for antimicrobial activity. 0.5 ml of Shodhita shilajatu 1% (5000µg), 2% (10000µg) & 5% (25000µg / 0.5 ml), 0.5 ml of Marita shilajatu 1% (5000µg), 2% (10000µg) & 5% (25000µg / 0.5 ml) and 0.5 ml of satwapatita shilajatu 1% (5000µg), 2% (10000µg) & 5% (25000µg / 0.5 ml) shilajatu were used as the test drug solutions for antimicrobial activity.

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, marita & satwapatita 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, marita & satwapatita shilajatu were shown zone of inhibition against the micro organisms, i.e Escheria coli, Staphylococcus Aureus, Pseudomonas Aeruginosa and Klebsiella speciesand fungi, i.e, Candida albicans & Aspergillus 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 Aspergillus 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 & Aspergillus niger.

CONCLUSION
Shodhita, marita & satwapatita shilajatu are having significant zone of inhibition against bacterial organism in comparision with fungal organism. Shodita & satwapatita solutions of
shilajatu in higher concentration demonstrated similar antibacterial activity compared to standard drug that is Benzathine penicillin against Escheria coli.

5% solution of shodita shilajatu shown significant antibacterial activity against S.aureus with 26mm zone of inhibition compared to standard drug (24mm). 5% solution of shodita shilajatu has shown significant antifungal activity against C.albicans with 26mm of zone of inhibition compared to standard drug Fluconazole(24mm).

Shodita & satwapatita shilajatu have demonstrated significant antibacterial and antifungal activity than Benzathine Penicillin (standard antibacterial drug), Fluconazole (standard antifungal drug) and marita shilajatu.

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