EVALUATION OF ANTIMICROBIAL ACTIVITY OF SHODHITA SHILAJATU

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ABSTRACT
Shilajatu is also having properties like Anti diabetic, Hepatotoxicity, Hypo glucemic, Hypolipidimic, Anti pyretic, Analgesic, Antioxidant and immunomodulatory etc studies on shilajatu have demonstrated significant results. Shilajatu is having multidimensional therapeutic activities mentioned in different classics. In ancient texts numbers of krimighna and kusthghna dravyas are explained. The word krimi is compared to various types of micro organism in contemporary science, which include bacteria and fungi etc. In ayurveda many herbal, mineral and herbomineral drugs are mentioned that are having antimicrobial properties. Shilajatu being one of the rasadravya explained in texts possessing krimighna and kustghna properties. Shodhita 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. Modern antimicrobial drugs may act as only antimicrobial with side effects but shilajatu is...
explained not only as antimicrobial but attributes as antioxidant, immunomodulatory & regenerative without side effect.

**KEYWORDS:** Shilajatu, Antimicrobial activity, Cup plate method, Krimigna, kusthagna.

**INTRODUCTION**

In ancient texts a numbers of krimighna and kusthghna dravyas are explained. The word krimi is compared to various types of micro organism in contemporary science which include bacteria and fungi etc. In ayurveda many herbal, mineral and herbomineral drugs are mentioned that are having antimicrobial properties. Shilajatu being one of the rasadravya explained in texts possessing krimighna and kusthghna properties.[1]

Shilajatu is having multidimensional therapeutic activities mentioned in different classics like immuno modulation[2], Anti microbial[3], hypo lipidemic,[4] spermatogenic,[5], positive results in latrozol induced PCOS[6] and hypoglycemic.[7]

Though many modern antimicrobial agents are available in market but they are not free of adverse effect. Further their effects are also not sustained for long time unless the real cause of the disease is not rooted out. So there is requirement to find a good antimicrobial agent without side effect or with minimal side effect. Hence an attempt was made with shodhita shilajatu to evaluate its anti microbial activity.

**MATERIALS AND METHODS**[8]

**Materials**

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

**Micro organisms**

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

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

**Method**

**Pharmaceutical study**

Shodhana of Shilajatu[9]: RRS 2/110-112
Anti microbial activity

Anti microbial activity was carried out according to CUP PLATE Method and it was conducted at BLDEA’s College of Pharmacy Vijayapur.[10-11]

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 RESULTS

Table No.1: Shows zone of inhibition (in mm) of 1%, 2% & 5% solutions of Shodhita shilajatu in camparision with standard & control drug.

<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>Shodhita shilajatu</td>
<td>1%</td>
<td>20 mm</td>
<td>16 mm</td>
</tr>
<tr>
<td>Shodhita shilajatu</td>
<td>2%</td>
<td>24 mm</td>
<td>20 mm</td>
</tr>
<tr>
<td>Shodita shilajatu</td>
<td>5%</td>
<td>28 mm</td>
<td>26 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></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>


DISCUSSION

1%, 2% &5% solutions of shodita 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) 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 test drug solutions i.e. shodita 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.ms.

On bacteria & fungi 0.5ml of the 1%, 2% & 5% test solution of shodita 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 shilajatu were subjected for antibacterial and antifungal activity with standard drugs Benzathine pencillin (antibacterial) and Flucanazole (antifungal). 5% Shodhita shilajatu has shown highly significant antimicrobial activity than standard and other samples. Thus these research studies on shilajatu have provided scientific base for krimigna and kusthagna property of Shodhita shilajatu mentioned in classical texts.

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