PHYTOCHEMICAL AND ANTIBACTERIAL STUDIES OF ORYZA SATIVA

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ABSTRACT

The present study deals with phytochemical and antimicrobial evaluation of Oryza sativa. This evaluation revealed the presence of many phytochemical constituents. The antibacterial activities of aqueous extract of leaf of Oryza sativa was determined by in vitro by agar diffusion-method against some human pathogenic bacteria. It has been showed that aqueous extracts had wider range of activity on these Organisms.

KEY WORDS: Oryza sativa, agar diffusion-method and pathogenic bacteria.

INTRODUCTION

In many industrialized countries herbal medicines are gaining popularity as alternative and complimentary therapies. Some of the plants are used as food or medicine. (Perez, C et al., 1993). These plants exhibit a wide range of biological and pharmacological activities such as anti-cancer, anti inflammatory, diuretic, oxytocic, laxative, antispasmodic, antihypertensive, anti-diabetic, and anti-microbial functions. The secondary metabolites of plants provides humans with numerous biological active products which has been used extensively as drugs, foods, additives, flavors, insecticides, colorants, fragrances and chemicals. (Ahmad et al., 1998). Many of the herbs and spices used by humans to season food yield useful medicinal compounds. (Alade et al., 1993). Oryza sativa is generally an annual grass, although some varieties are perennial. Plants typically grow in a tuft (clump) of upright culms (stems) up to 2 m or more tall, with long, flat leaf blades. The flowers grow on broad, open terminal panicles (branched clusters). The oblong spikelets, which each contain a single
flower (that develops into a single kernel of grain), are sparse along the stem rather than forming dense clusters.

MATERIALS AND METHODS

Collection of Plant Material
The healthy plant samples of *Oryza sativa* was collected from Trichy. The collected plant materials were transported to the laboratory.

Preparation of Leaf Powder
The *Oryza sativa* was collected, washed and cut into small pieces and dried at room temperature for two weeks and made into powder for further analysis.

Extraction of Plant Material
Aqueous and alcoholic extracts were prepared according to the methodology of Indian pharmacopoeia (Chopra, R.N 1966). The shady dried plants materials were subjected to pulverization to get coarse powder. The coarse powder material was subjected to soxhlet extraction separately and successively with alcohol and distilled water. These extracts were concentrated to dryness in flash evaporator under reduced pressure and controlled temperature (40-50°C). The aqueous and alcohol extracts put in air tight containers stored in a refrigerator (Chulasuri, M et al., 1997).

Antimicrobial activity

Micro organisms and culture media
The bacterial cultures such as, pseudomonas sp were obtained from doctor diagnostic center, Trichy. The bacterial strains were maintained on nutrient agar medium. The antibacterial activity studied by agar well diffusion method.

RESULTS

Table 1: Preliminary Phytochemical Aqueous Leaf Extract Of *Oryza Sativa*

<table>
<thead>
<tr>
<th>Phytochemical constituent</th>
<th>Alkaloids</th>
<th>Terpinoids</th>
<th>Steroids</th>
<th>Coumarins</th>
<th>Tannin</th>
<th>Flavonoids</th>
<th>Phenolic compounds</th>
<th>Sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Results</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
Table 2: Antibacterial Activity Of Aqueous Leaf Extract Of Oryza Sativa By Agar Well Diffusion Method

<table>
<thead>
<tr>
<th>Plant Extract</th>
<th>Species Name</th>
<th>Zone Of Inhibition In Mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oryza sativa (leaf)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Concentration</td>
<td>50 mg</td>
</tr>
<tr>
<td>E.coli</td>
<td>0.7±0.02</td>
<td>1.0±0.03</td>
</tr>
<tr>
<td>Pseudomonas</td>
<td>0.6±0.02</td>
<td>0.8±0.04</td>
</tr>
</tbody>
</table>

Values are mean ± SD

DISCUSSION

The phytochemical test of *Oryza sativa* shows the presence of alkaloids, sugar, Terpinoids, flavonoid and phenolic compound. Various herbs and spices have been reported to exhibit antioxidant activity. A majority of the antioxidant activity is attributed to the flavones, isoflavones, flavonoids, anthocyanin, coumarin, lignans, catechins and isocatechins (David, M et al., 1999).

The antibacterial effect of the leaf extracts *Oryza sativa* was determined by well diffusion method. Aqueous leaf extract of *Oryza sativa* exhibited enormous activity against *E.coli*. Moderate amount of inhibition zones were recorded in Pseudomonas (Davis, J et al., 1994).

CONCLUSION

Alkaloids, Terpinoid, Steroid, Flavonoid, Sugar, and Phenolic compound were present in aqueous extract of *Oryza sativa*. The antimicrobial activity of *Oryza sativa* against *E.coli and Pseudomonas auriginosa* was done. The antimicrobial *Oryza sativa* of may be attributed to the various phytochemical constituents present in the crude extract. The purified components may have even more potency with respect to inhibition of microbes.

REFERENCES

