Antipyretic Activity of Hydroalcoholic Extract of Leaves of Colocasia esculenta

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INTRODUCTION

The aim of the present context is to evaluate the antipyretic activity of the Hydroalcoholic (Water 30%+alcohol 70%) extract of leaves of Colocasia esculenta in brewer yeast induced pyrexia model in Wistar rat. Colocasia esculenta (Apiaceae) is a tropical perennial plant. The plant leaves are up to 20 to 150 cm and shape is like elephant ear. It is indigenous in New Zealand, and west to Indonesia. It is cultivated all over India. Plant used as vegetable. The plant leaves are quite nutritious and low in calories, replacing higher calorie. Taro flower is used for soups, gravies, puddings. Colocasia esculenta requires moist condition. It is commonly found near water sources. It contain flavonoids, alkaloids, apigenin, autoelin, apigenin, carbohydrates, fiber, minerals, protein, fat, calcium and iron, magnesium, cholesterol, zinc, sodium, potassium and vitamin A, vitamin C, vitamin E, vitamin K, energy, and pyridoxine. There was no report on the extensive antipyretic study of the Colocasia esculenta leaves of this plant species. To the best of my knowledge, this is the first time the leaves are screened for antipyretic activity.

MATERIALS AND METHODS

Plant materials
Leaves of Colocasia esculenta were collected from local market of city, Indore Madhya Pradesh. Colocasia esculenta leaves were authenticated by “Dr. S N Dwivedi, Head of the department of botany, Janata PG Collage, A.P.S. University, Rewa”

Figure 1: Leaves of Colocasia esculenta
Antipyretic activity

The antipyretic activity of the given drug was determined. Divided the animal in four groups each containing six animals (rats) of either sex were recruited for the study.

Brewer's yeast method

Four groups of six rats were formed. Group I was control groups received normal saline. Group II was standard group treated by Paracetamol (100 mg/kg). Group III was test group-I treated rats received leaves extract of herbal drug (200 mg/kg). Group IV was test control group-II treated rats received leaves extract of herbal drug (400 mg/kg). All the test drug were administered orally. Fever induced in the animal (rats) by the injection 15% w/v of brewer's yeast suspension (10 mg/kg according to body weight of rats) subcutaneously in the back below the nape of the neck. The sight of injection was massaged in order to spread the suspensions beneath the skin. The room temperature was kept at 22-24°C. Immediately after yeast administration, food was withdrawn and rise in rectal temperature was recorded. The measurement was repeated after 30 minutes. The dose of the test compounds and standards drugs was given orally. The rectal temperature was recorded again after 0, 1, 2, 3 and 4 hours. 9-16

Statistical analysis

The study data were expressed as mean SEM. The study data of Antipyretic activity was analysed by one way analysis of variance (ANOVA). P value 0.001 was considered as statically significant.

RESULTS

Table 1: Effect of Antipyretic activity of Hydroalcoholic extract of Colocasia esculenta in Brewer’s yeast method.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Treatment</th>
<th>Dose(mg/kg)</th>
<th>Basal temperature °F</th>
<th>0 hours</th>
<th>1 hours</th>
<th>2 hours</th>
<th>3 hours</th>
<th>4 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Control group (normal saline)</td>
<td>-</td>
<td>37.08</td>
<td>39.03±0.155</td>
<td>39.13±0.160</td>
<td>39.32±0.184</td>
<td>39.18±0.136</td>
<td>39.13±0.150</td>
</tr>
<tr>
<td>II</td>
<td>Standard group (Paracetamol)</td>
<td>100 mg/kg</td>
<td>37.43</td>
<td>39.05±0.107</td>
<td>38.84±0.177**</td>
<td>38.38±0.217***</td>
<td>38.18±0.162***</td>
<td>37.94±0.191***</td>
</tr>
<tr>
<td>III</td>
<td>Test group-I (Ceculenta)</td>
<td>200 mg/kg</td>
<td>37.23</td>
<td>39.97±0.186</td>
<td>38.98±0.320*</td>
<td>38.74±0.169**</td>
<td>38.33±0.179**</td>
<td>38.26±0.018**</td>
</tr>
<tr>
<td>IV</td>
<td>Test group-II (Ceculenta)</td>
<td>400 mg/kg</td>
<td>37.30</td>
<td>39.08±0.226</td>
<td>38.87±0.212**</td>
<td>38.62±0.162**</td>
<td>38.29±0.155**</td>
<td>38.21±0.175**</td>
</tr>
</tbody>
</table>

All values are mean ±SEM (n=6); *p<0.05, **p<0.01, ***p<0.001, when compared to control.

DISCUSSION

Table 1 shows data related to the effect of Hydroalcoholic extract of leaves of Colocasia esculenta on yeast-induced pyrexia at different time intervals. Yeast induced fever is called pathogenic fever. Its etiology includes production of prostaglandins, which set the thermoregulatory center at a lower temperature. The present results show that Hydroalcoholic extract of Colocasia esculenta leaves possesses a significant antipyretic effect in yeast-provoked elevation of body temperature in rats and its effect is comparable to that of paracetamol (standard drug). So inhibition of prostaglandin synthesis could be the possible mechanism of antipyretic action as that of Paracetamol.17

CONCLUSION

In the present pharmacological evaluation the Hydroalcoholic extract of leaves of Colocasia esculenta. Plant was investigated for the antipyretic activity against Brewer’s yeast induced pyrexia in rats. At the end of our study, a strong conclusion can be drawn that, the Hydroalcoholic extract of the plant at a dose level of 200mg/kg and 400mg /kg exhibited competent, potent and comparable results. It promotes Colocasia esculenta plant as a promising antipyretic plant species, seeking vast multidimensional future research work up to the molecular level to establish new up-to-date scientific data about this plant species and to elucidate its exact mechanism of antipyretic effect.
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