INTRODUCTION

Anemia is a condition that develops when blood lacks enough healthy red blood cells or hemoglobin. Anemia affects the lives of more than 2 billion people globally, accounting for over 30% of the world’s population which is the most common public health problem particularly in developing countries occurring at all stages of the life cycle [1]. Iron deficiency is the most common nutritional disorder in the world. Worldwide, Iron-deficiency anemia is a significant problem and especially in developing countries it is widespread yet the most neglected micronutrient deficiency disorder among children, adolescence girls, and pregnant women [2].

Kedrostis foetidissima (Family: Cucurbitaceae) is a herbaceous perennial plant producing annual stems up to 3 meters long from a tuberous, perennial rootstock. The stems scramble over the ground and climb into the surrounding vegetation, attaching themselves by means of tendrils. The leaves are a favored food of some native peoples, where they are commonly harvested from the wild for local use. Kedrostis foetidissima, traditional medicinal plant, locally named as Appakovai, in Tamil, the juice of leaves used to treat common cold and diarrhoea in children [4,5]. The roots crushed, mixed in cold water is taken once a day for the treatment of Measles (6).

Kedrostis foetidissima which is very effective in the treatment of asthma, chest pain and urinary tract infection, diarrhoea, HIV, small pox, skin diseases, snake bite [7]. Kedrostis foetidissima have higher iron, vitamin, niacin and more starch content [8]. Based on the rich iron content in Kedrostis foetidissima, the current study is planned to evaluate the anti-anemic activity of Kedrostis foetidissima against phenylhydrazine induced hemolytic anemia in rats.

MATERIALS & METHODS

Plant Material

The leaves of Kedrostis foetidissima was collected from Kolli hills. It was identified and authenticated as Kedrostis foetidissima by Scientist ‘F’ Botanical survey...
of India, Southern Regional Centre, Tamilnadu Agriculture University, Coimbatore. The voucher specimen (BSI/SRC/5/56/15-16/Tech - 321) has been deposited in department for further references.

Preparation of Extract

The collected leaves were, shade dried and then ground into coarse powder. The powder was then subjected to exhaustive extraction by a maceration process using 90% ethanol as a solvent at room temperature for 7 days. The ethanolic extract was concentrated by vacuum distillation to dry. The collected extract was stored in desiccators and used for further pharmacological study.

Animals

Healthy adult albino rats of Wistar strain of both sex, weighing about 150-200 g were obtained from the animal house of Chengalpattu Medical College, Chengalpattu. The rats of either sex were isolated and housed in separate cages during the course of experimental period and kept them at room temperature (24± 2°C) with a 12 : 12 h light/dark cycle. The animals were fed with standard pellet diet and provided water ad libitum. All the procedures and protocols were reviewed and approved by the Institutional Animal Ethics Committee of Chengalpattu Medical College, Chengalpattu.

Anti-Anemic Activity

Induction of Anemia

Anemia was induced in rats by intraperitoneal administration of phenylhydrazine (60mg/kg) daily for 2 days [9]. Rats that developed anemia with Hemoglobin concentration lower than 13 g/dl were recruited for the study.

Treatment of the animals

The anemic rats were randomly divided into 4 groups six animals each. Group I was non anemic animals (normal control) received 1ml/kg of 0.1% Carboxy methyl cellulose solution. Group II was served as anemic control and group III served as reference control, received Vitamin B₁₂ syrup (1 ml/rat) and group IV animals received 200mg/kg of Kedrostis foetidissima extract through oral administration, by suspending in CMC solution. All the test drug were administered orally, once daily for 28 days.

On 29th day, blood was collected in EDTA coated tubes, by sinus puncture under phenoobarbitone (45mg/kg, ip) anaesthesia. The following parameters like, Red Blood Cell count (RBC), Hemoglobin (Hb) and Hematocrit percentage (HCT) were evaluated in blood [10].

Statistical Analysis

Data’s were expressed as mean ± SEM. The data were analyzed by using one way analysis of variance (ANOVA) followed by Dunnet’s ‘t’ test. P values < 0.05 were considered as significant.

RESULTS

Anti-anemic activity of Kedrostis foetidissima leaf extract on Phenylhydrazine induced hemolytic anemia in rats was studied and the results were shown on table 1. The anti-anemic activity of Kedrostis foetidissima leaf extract was assessed by determining the red blood cell count, hemoglobin and hematocrit percentage. Phenylhydrazine decreased the RBC, Hb and % HCT as compared normal control. There was significant (P<0.001) increase in RBC and Hb with both Vitamin B₁₂ and Kedrostis foetidissima leaf extract against phenyhydrazine challenge. Also there was significant (P<0.01) increase in % HCT with both Vitamin B₁₂ and Kedrostis foetidissima leaf extract. This shows that Kedrostis foetidissima effective anti-anemic activity against phenyhydrazine induced hemolytic anemia in rats and it has comparable effect as that of the standard drug Vitamin B₁₂.

Table 1: Effect of Kedrostis foetidissima leaf extract on Phenylhydrazine induced hemolytic anemia in rats

<table>
<thead>
<tr>
<th>S.No</th>
<th>Drug Treatment</th>
<th>RBC (10⁶ µL⁻¹)</th>
<th>Hb (g dL⁻¹)</th>
<th>HCT %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normal Control (0.1% CMC)</td>
<td>8.91±0.61</td>
<td>13.52±0.55</td>
<td>47.88</td>
</tr>
<tr>
<td>2</td>
<td>Anemic Control Phenylhydrazine (60mg/kg)</td>
<td>4.81±0.14</td>
<td>6.22±0.23</td>
<td>28.42</td>
</tr>
<tr>
<td>3</td>
<td>Reference Control Vit B₁₂ (1ml/rat)</td>
<td>8.35±0.42***</td>
<td>13.13±0.73***</td>
<td>45.29**</td>
</tr>
<tr>
<td>4</td>
<td>Test Control Kedrostis foetidissima (200mg/kg)</td>
<td>8.04±0.54***</td>
<td>13.05±0.74***</td>
<td>43.61**</td>
</tr>
</tbody>
</table>

Data were expressed as Mean ± SEM (n=6)  
*P<0.05, **P<0.01 and ***P<0.001 Vs Anemic Control

CONCLUSION

The ethanolic leaf extract of Kedrostis foetidissima exhibits anti-anemic activity against phenyhydrazine induced anemia in rats. The anti-anemic effect produced by the Kedrostis foetidissima leaf may be due to its high content of iron which is present in the plant.
REFERENCES


