IN VIVO FERTILITY ENHANCING ACTIVITY (APHRODISIAC) OF FICUS CARICA FRUIT ON MALE WISTAR RATS

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ABSTRACT

Objectives: Ficus carica fruit was used traditionally for its fertility enhancing activity by folklore physician. So, to add to the existing knowledge of pharmaceutical significance of the above plant this work was chosen.

Methods: The dried fruits of Ficus carica were extracted by cold maceration method using aqueous ethanol. Ethanolic extract of Ficus carica fruit was screened for in vivo aphrodisiac activity.

Results and conclusion: Qualitative phytochemical analysis of fruits of Ficus carica showed the presence of tannins, flavanoids, saponins, carbohydrates and proteins. Results reveal that on the 1st day of treatment all the treated groups showed increase copulatory sexual behavior and orientational activity in all the experimental animals. The prolonged treatments for all the treated groups were highly effective for increase the sexual libidity, as compared to the solvent control. This indicates that aphrodisiac activity has been shown by ethanolic extract.

Keywords: Ficus carica fruit, Aphrodisiac activity, Copulatory sexual behavior, Sperm count

INTRODUCTION

India has one of the oldest, richest and diverse traditions associated with the use of medicinal plants. Medicine is a very ancient part and drugs have been used in days of antiquity as far back as history can take us. In this context, it is difficult to discuss the whole domain of herbal medicines which have acceptable quality, safety and efficacy. Herbal therapies had become an integral part of health care science. Their medicinal products used in conventional practice were derived from plants. The higher plants provide secondary metabolites of wider variety, there is a growing interest about the benefit of using crude plant extract containing mixtures rather than single moiety. However there are still many challenges and obstacles to the acceptance of plant extract in modern medicinal concept. In this direction, folk medicine have already been made [1].

Literature review reveals that Ficus carica have been reported for various pharmacological activities such as antispasmodic and anti platelet activities [2], free Radical scavenging Activity[3], cytotoxic effects[4], antifungal[5], hypotriglyceridaemic activity[6], anti-angiogenic Activity[7], anti-pyretic[8], anti-inflammatory activity[9], antimicrobial activity[10], immunomodulatory activity[11] and hepatoprotective activity[12].

Traditional knowledge is a very big asset in most of the developed as well as in developing countries. Especially in India there are many indigenous herbs which are traditionally used in treatment of various diseases. The nearly 121 plant products approved in the international market for treating various disorders of the human body, nearly 74 of them has been using the traditional knowledge from folklore as the lead compound. Like wise fertility enhancing activity of the plant Ficus carica has existing for quit a long time. So, to add to the existing knowledge of pharmaceutical significance of the above plant this work was chosen.

MATERIALS AND METHODS

Chemicals

Petroleum ether, ethanol, reagents, carboxy methyl cellulose, were purchased from merck specialities Pvt Ltd, Mumbai. Progesterone and Oestrogen injections were purchased from local market of Andhra Pradesh.

Extraction

The fruits (fig 1) of Ficus carica were collected and dried for 10 days. After drying the fruits were grind in to fine powder. The powder was macerated in a container using aqueous ethanol for 15 days with occasional shaking. The mark obtained was evaporated to dryness at room temperature. The obtained extract was used to phytochemical and pharmacological studies.

Fig. 1: Fruits of Ficus carica

Phytochemical investigation of ethanolic extract of Ficus carica fruit

Ethanolic extract of Ficus carica fruit was tested for the phytoconstituents such as alkaloids, carbohydrates, proteins, steroids, glycosides, saponins, flavanoids, tannins, triterpenoids and fixed oils [13].
In vivo aphrodisiac screening of ethanolic extract of *Ficus carica* fruit

**Preparation of male rat**

The male Wistar rats weighing between 150-200 gm were trained for the sexual behavior like mounting, intromission etc., once a day for a period of 10 days in presence of female rats. A male rat was housed individually in a cage along with two female rats (oestrous phase). Then 15 minutes was allowed as the time required for acclimatization, which was then observed for 1 hour. The males were considered as sexually active only if they attempted to mount the female, when it was introduced into the cage. The male rat which did not show any sexual interest during the test period was considered as inactive male. The sexually active male rats were used for Aphrodisiac activity.

**Preparation of female rat**

Female rats were housed in 2 groups with food and water ad libitum. The female rats were brought to the oestrous phase by treating them with oestradiol (10μg/kg b.wt), subcutaneously 48 hours before the observation. Progesterone (1.5mg/kg b.wt), was administered 5 hours prior to experimentation subcutaneously to make the animal sexually acceptable. The female rats which were in oestrous phase were confirmed by observing their vaginal smear.

The sexually active male rats were grouped separately and divided into 3 groups, each group consisting of 6 animals. All the animals of the divided groups were administered the test or the solvent control doses, daily, orally using oral catheter, in their respective concentrations. The experimental details are given in table-1

<table>
<thead>
<tr>
<th>Group</th>
<th>Treatment</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>Solvent Control</td>
<td>1ml of 0.3% CMC Suspension</td>
</tr>
<tr>
<td>Group II</td>
<td>Ethanolic Extract</td>
<td>200mg/kg b.wt in 0.3% CMC</td>
</tr>
<tr>
<td>Group III</td>
<td>Ethanolic Extract</td>
<td>400mg/kg b.wt in 0.3% CMC</td>
</tr>
</tbody>
</table>

Sexual behavior was observed in a dim light at day time in specially designed cages having Glasson all sides and measuring 50X30X30 cu.cm. The male experimental rats were transferred to cage and the female rats in oestrous phase were introduced with male s for one hour. The first 15 minutes were considered as acclimatization period. The activities of male mice in each group were recorded individually for 60 minutes after 30 minutes of drug administration on 1st, 7th, and 14th day treatments. The following parameters such as Mounting, intromission, licking, anogenital sniffing, genital grooming, non-genital grooming were observed [13].

**Determination of Sperm count**

After 14th day of treatment rats were sacrificed, seminal fluid was collected from epididymis using forced extraction method. Sperm count was determined by Neubauré’s ruling chamber method [13]. Sperm count was calculated as per the formula

\[
\text{Sperm count per ml} = \text{Sperm count x 10 X 1000} \times \frac{4 \times 0.1}{4 X 0.1}
\]

Sperm count was expressed in terms of the number of sperms per ml and results are given in table-2. Microscopic view of sperms of control and treated groups are shown in fig-2, 3 and 4 respectively.

**RESULTS AND DISCUSSION**

The plant selected for the study was fruit of *Ficus carica*. The plant fruit were collected from Andhra Pradesh, India. The dried powdered fruit was extracted with petroleum ether and aqueous ethanol. All the extracts were concentrated to dryness under reduced pressure and controlled temperature. Qualitative phytochemical screening was carried out for the ethanolic extract. Qualitative phytochemical analysis of fruits of *Ficus carica* showed the presence of tannins, flavanoids, saponins, carbohydrates and proteins.
Ethano Botanical information reveals that fruit of Ficus carica possess fertility enhancing property in both sexes. Based on this information ethanolic extract of fruit of Ficus carica were screened for Aphrodisiac activity. On the 1st day of treatment all the treated groups showed increase copulatory sexual behavior and orientational activity in all the experimental animals as revealed by the result (Table-2). The prolonged treatments for all the treated groups were highly effective for increase the sexual libido, as compared to the solvent control. This indicates that aphrodisiac activity has been shown by ethanolic extract.

It is likely that the extracts help in improving the testosterone availability to gonads. Increase in testosterone level has been observed by几百 researchers. It is likely that the extracts help in improving the testosterone availability to gonads. Increase in testosterone level has been observed by several researchers. This work gives scientific evidence to the existing traditional knowledge.

In conclusion the ethanolic extract of fruits of Ficus carica provides fertility enhancing property in both sexes. Based on this information ethanolic extract of fruit of Ficus carica were screened for Aphrodisiac activity. On the 1st day of treatment all the treated groups showed increase copulatory sexual behavior and orientational activity in all the experimental animals as revealed by the result (Table-2). The prolonged treatments for all the treated groups were highly effective for increase the sexual libido, as compared to the solvent control. This indicates that aphrodisiac activity has been shown by ethanolic extract.

CONCLUSION
In conclusion the ethanolic extract of fruits of Ficus carica showed the aphrodisiac activity and it is dose dependent. This work gives scientific evidence to the existing traditional knowledge.

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