EFFECT OF Phyllanthus amarus ON REPRODUCTIVE FUNCTION OF MALE ALBINO MICE

Jitendra Kumar¹ and Manoj Kumar²

¹Research Scholar, P.G. Department of Botany, College of Commerce, Arts and Science, Patna, Bihar, India and ²Associate Professor, P.G. Department of Botany, College of Commerce, Arts and Science, Patna, Bihar, Patna, Corresponding Author: Jitendra Kumar

Abstract: Oral administration of Phyllanthus amarus leaf extract, fungicide caused a significant radiation in the weight of testes and sex accessory glands of male albino mice. A sharp decline in the fertility 80%(-ve) and a significant reduction in sperm motility and density were observed. The s-acid total protein and glycogen contents of testes were reduced significantly (P<0.002) where as the testicular glycogen contents were increased. The plant has also served as lead for several experimental investigations that explored its phytochemical constituents and pharmacological uses present paper compiles traditional use, phytoconstituents and pharmacological properties of Phyllanthus amarus. This herb is in traditional medicine for more than 3000years.

Keywords: Phyllanthus amarus, traditional use, mice, testicular glycogen, chemical constituents, Pharmacological properties.

Introduction: Phyllanthus amarus is a plant of the family Euphorbiaceae and has about in tropical and subtropical countries of the world. The name Phyllanthus means leaf and flower and the named. So because of its appearance where flower, fruit and leaf appears fused. Plant is a branching annual glabrous herb which is 230-60cm high and have slender, leaf-bearing branchlets distichous leaves which are subsessile elliptic-oblong obtuse round base flowers are yellowish, whitish or greenish, axillary, male flower in groups of 1-3 where as females are solitary. Fruits are depressed globose like smooth capsules present underneath the branches and seeds are trigonous, pale brown with longitudinal parallel ribs on the back.

It has been found in India, Cuba, Philippines and Nigeria. Phyllanthus amarus (L.e.) resulted in toxic effects in kidney, liver and reproductive organs in exp animals [1, 2]. However, exps has been conducted to prove Phyllanthus (L.e.) administration can actually decrease fertility [3, 4].

Therefore, experiments were performed to determine the ability of orally administered to determine the ability to alter the fertility of male mice. The present study deal with the effects of leaf extract on testicular morphology, dynamics fertility tests and biochemical changes in the testes of albino mice.

Materials and Methods

Ten healthy adult male albino mice of inbred colony housed in air conditioned animal house at 24 °C ± 2°C with 16 hrs light water and food was given. They were dived into two groups containing five animal each groups. The first group served as vehicle (olive oil) treated control. In the second group animals, leaf extracts 5ml each mice, mixed in 0.1ml olive oil was given orally for the period of 45 days. (A-20mg/kg and B-20mg/kg).The animals were screened for fertility test and autopised for detailed biochemical studies, reproductive organs were excised, blotted free of blood, wt and were frozen for biochemical examination. The sperm motility and density of cauda epididymal spermatozoa was assessed by the method [5]. The total protein [6] sialic acid [7], total cholesterol [8] and glycogen [9].

Phyllanthus amarus have numerous phytocompounds such as phyllanthin, alkaloids, flavonoids, tannins, lignin, polyphenolic
compounds and tetracyclic triterpenoids. Several phytoconstituents isolated from this plant are enlisted method. We study, it has been found that boiled water extract of the fresh and dried Phyllanthus amarus plant had comparatively greater antioxidant activity than microwave assisted extraction method employed for the extraction.

**Results**

**WT Responses:** The wt of testis, epididymis, seminal vertical and prostate gland were decreased significantly (P<0.002) after the extract administration (Table–A).

### Table- A: Change in the Body wt and Organs wt after Phyllanthus Aamarus Extracts Treatment in Albino Mice

<table>
<thead>
<tr>
<th>Treatment</th>
<th>No. of albino</th>
<th>Average body wt(g)</th>
<th>Organs wt(mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male mice</td>
<td>Initial</td>
<td>Final</td>
</tr>
<tr>
<td>Control (untreated)</td>
<td>5</td>
<td>250±7.0</td>
<td>200±6.5</td>
</tr>
<tr>
<td>Leaf extract (treated)</td>
<td>5</td>
<td>220±6.0</td>
<td>180±6.2</td>
</tr>
</tbody>
</table>

**Sperm Dynamics and Fertility:** Extract administration resulted in a sharp decline in sperm motility in cauda epididymis. A significant (P<0.002) decrease in sperm quantity in testes and cauda epididymis was observed (Table – B).

### Table- B: Biochemistry Testicular Sperm Dynamics and Fertility Test After Leaf Extract Treatment

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cholesterol (in mg)</th>
<th>Glycogen (in mg)</th>
<th>Sialic acid (in mg)</th>
<th>Total Protein</th>
<th>Sperm testis quantity (million/ml)</th>
<th>Sperm motility (%)</th>
<th>Fertility (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (untreated)</td>
<td>12.2±1.2</td>
<td>2.4±0.2</td>
<td>6.9±1.2</td>
<td>275±12.0</td>
<td>1.25±0.5</td>
<td>41.1±0.2</td>
<td>70.2±6.2</td>
</tr>
<tr>
<td>Treated leaf Extract for 45 days</td>
<td>16.5±0.7</td>
<td>0.81±0.1</td>
<td>5.0±0.8</td>
<td>162±10.2</td>
<td>0.60±0.9</td>
<td>24.1±0.2</td>
<td>29.6±0.2</td>
</tr>
</tbody>
</table>

Fertility test showed 80% (-ve) fertility in extract treated albino male mice. Extract component brings about a marked reduction in testicular contents of total protein (P<0.002), sialic acid (P<0.002)and glycogen (P<0.002). The cholesterol contents of testis were increased significantly where as the seminal vesicular fructose was decreased (P<0.002) significantly (Table-B). This work was performed in order to investigate histopogical effects of Phyllanthus amarus leaf extracts on the kidney [10, 11].

**Statistical Analysis:** The results were expressed as mean ± SD. Data was analyzed by one way analysis of variance. Sequential difference among means were calculated at the level of (P< 0.05) using Turkey contrast analysis as needed.

**Discussion**

The result revealed that administration of Phyllanthus amarus caused varying degree of cyto architectural distortion and vasculogenic effect on the kidney, which affected blood vessels etc. The present study indicates that oral administration of Leaf extract 5 ml each mice (20mg/kg wt for 45 days), brings about a significant reduction in wt of testes epididymis ventral prostate and seminal vesicle. This is could be due to androgen ablation which results in a decrease in overall cellular activities and increase in cell death, leading to regression of these organs [12]. documented the strong correlation between testicular size, total sperm count, sperm motility and sperm epididymis is of importance in the end result of fertilization. The androgenic parameter like protein and sialic acid were decreased in testes. The reduction of protein many be due to suppression of testosterone biosynthesis. The importance of this report lies in the potential adverse of Phyllanthus amarus on the microanatomy of tissues and organs. Sialic acid involved in maintaining the structural integrity of acrosomal and plasma membrane of sperm and play a role in sperm maturation and transport in epididymis. It caused a significant reduction in the glycogen contents could be due to impaired glycolysis. The cholesterol contents of testes increased in mice.

**Conclusion:** The results obtained in this study revealed that administration of Phyllanthus amarus could affect the biochemical component of testes of albino male mice. The present results suggest that leaf extract suppressive effects on testicular function and causes infertility in albino male mice it causing disruptions and distortions. These results suggest that the functions of the reproductive organs of albino male mice affected. It is recommended that caution should therefore be advocated in the intake of this product and further studies be carried out to examine these findings.
References