

Contraceptive utility of jequirity bean-*Abrus precatorious* (Rosary pea/Gunja) in the male rats

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Abstract

The dosage and administration of 50% Ethanolic Extract of *Jequirity Bean* Seeds extract at 0.75gm/kg (75mg/kg) dosage for 45 and 90 days. The Male Rat Groups Treated and Control were administered after 24 hrs of last dose under Di-ethyl ether or Chloroform Anesthesia and dissected immediately. Reproductive Organs of Rats like Testis and Epididymis were taken out, freed from adherent tissue and blood. The weight of both Organs was recorded separately. The significance difference of weight between the treated and control rats was assessed by student, unpaired 't' test taking $P < 0.05$ as load of significance. The Testis and Epididymis was fixed in Bowin's fluid, washed, dehydrated and embedded in Paraffin wax. The Tissues were sectioned at 5 micron and stained with stain of Haematoxylin & Eosin for Histological studies purpose. After dissection and makes permanent histological slides, we found various types of cells in the Seminiferous tubules which were normal in structure but Spermatogonia and Spermatocytes displayed a few changes in their structures. The initial and final body weight of the experimental and control group rats were recorded for measures their differences if appears.

Keywords: Male rats, Jequirity bean, Di-Ethyl Ether, Haematoxylin, Eosin

Introduction

In Nature a large number of Ayurvedic Plants growing in different parts of the world which are used by the native people for their importance or efficiency.

The Research work on the Ayurvedic Plants as Contraceptive or Garbh-Nirodhak in systematic way is lacking. The need for a cheap, safe & effective Oral Contraceptive is urgently needed. It should also be easily available and should not have any side effects, Hence, the Research for a suitable product from Ayurvedic plants is proposed for controlling the Birth-Rate or controlling the fertility of Men and other Members of the Animal Kingdom to control their Population or Birth-Control.

Ayurvedic Garbh-Nirodhak or Contraceptive Plants are the chief source of Natural Product which are often used in various ailments.

Crude preparations of these herbs or plants is used by Ayurvedic Practitioners. Although Medicinal or Ayurvedic plants impart innumerable virtues number of times, these plants also induce Toxicity. Keeping all these facts into consideration the present Research study has been taken up to study the Effect of Extracts preparations of Plant such as Jequirity Beans / Rosary Peas (Gunja).

On the basis of Folklore and experimental data, the following authors de Laslo & Henshaw (1954) ref.1, Chopra *et al.* (1958) [2], Himes (1963)3, Malhi & Trivedi (1972) [4], Farnsworth *et al.* (1975a) [5], b)5, Billore & Audichya (1978) [6], Kamboj & Dhawan (1981), Satyavati (1984)8, Chaudhary *et al.* (1990) [9], Stanely *et al.* (1993)10, Akbarsha & Murugain (2000)11 have reported many Ayurvedic Contraceptives or Garbh-Nirodhak Plants in Male Rats for their Infertility.

Material and Methods

Male Rats were maintained under Laboratory Conditions in which providing them with standard diet and water ad libitum seeds of *Jequirity beans* were Collected Powdered & using 50% of Di-Ethyl Ether Alcoholic Extract.

For Extraction we used Soxhlett Apparatus. The Extract of seeds was evaporated and dried under low temperature.

The dried powder measured into dosage of 0.75gm/kg and this dosage was macerated with 0.5% Gum Acacia powder in distilled water.

Results and Discussion

The Volume was adjusted in such a way that 1 ml. of solution correspond to 0.75gm of the dosage / kg body weight fed orally to treated Rat per day.

The soft Catheter tube fitted into Syringe was used for feeding, thus three groups of Treated Rats.

- **Group Ist:** Treated Vehicle only another is Controlled Group were made.
- **Group IInd:** Dosage 0.75gm/kg Administered to Rats for 45 days.
- **Group IIIrd:** Dosage Administered 0.75gm/kg to Rats for 90 days.

(Five rats were used in each group).

The initial and final body weight of the Experimental and Control group Rats were recorded.

The Rats from all groups of Treated and Control group were sacrificed after 24 hrs of last dose under light Chloroform or Di-Ethyl Ether Anesthesia and dissected immediately.

Reproductive organs testes and epididymis from male Rat were taken out freed from adherent tissue and blood.

The weight of both organs was Recorded separately. The significance difference of weight between the Treated and Control Group Rats was assessed by student, unpaired “t” test taking <0.05 as load of significance.

The Testis and Epididymis was fixed in Bowin’s fluid, washed, dehydrated and embedded in Paraffin Wax The Tissues were sectioned at 5 micron thick in Microtome and after that slides prepared and stained in Haemotoxyle and Eosin for Histopathological Studies.

Conclusion

The Transverse Section through Microtomy of Testes of the Control Rats consists of Highly Dense and Expanded Seminiferous Tubules with successive stages of Germ Cells such as Primary Spermatocytes, Secondary Spermatocytes, Spermatids and Spermatozoa.

The Sperms were Present in large Numbers and their disposition was typical. The interstitial spaces were filled with loose Connective Tissues made up of Cells of Leydig’s along with Blood Vessels. The Germinal Epithelium appeared Normal.

Jequirity Beans or *Rosary Peas* (*Abrus precatorius* or *Gunja seeds*) proves that they are highly effective for Infertility / Contraceptive Activity (Garbh-Nirodhakta) for Swiss Male Albino Rats which were orally administered.

Photomicrographs with explanations

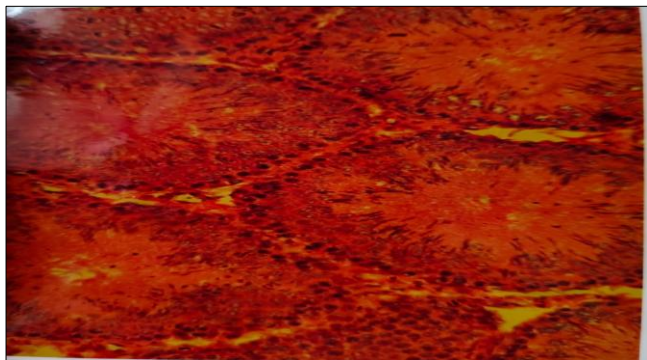


Fig 1: T.S. of Testis of Albino Rat of Control Group. Full Spermatogenic Activity in Seminiferous Tubules and Normal Leydig’s Cells in Interstitium. X250.

The Administration of 0.75gm/kg Dosage of 50% Di-Ethyl Ether extract of *Abrus precatorius* (Seeds) Linn for 45 days. Mildly Affected the Histology of the Testis. The Seminiferous Tubules were Disfigured. The Spermatogonia and Spermatocytes displayed various Changes in their organisation. Many Spermatocyte Nuclei were Swollen and a few Atrophied. Sloughing of Dead Germ Cells Occurred into Lumen of the tubules. The Dissolution of the Tubule Membrane and Leakage of Germ Cells was evident at Certain Places.

Occasional Immature Sperms could be seen. Leydig’s cells Atrophied in the Reduced Interstitium. The vascularity was

also reduced.

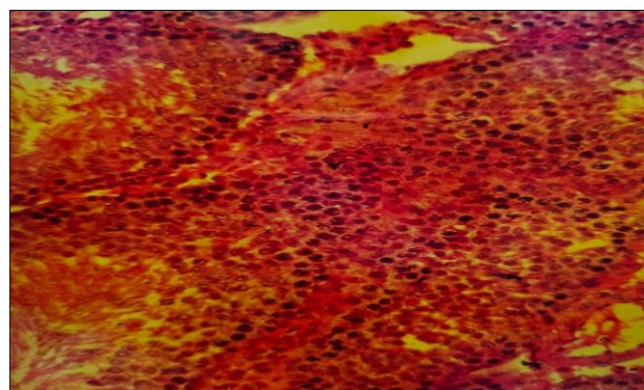


Fig 2: T.S. of Testis of Albino Rat of Treated Group with *Jequirity beans* alcoholic extract at 0.75gm/kg Dosage for 45 Days Displayed various Changes in the Testis, Seminiferous tubules, Germinal Epithelium and Leakage of Germ Cells Interstitium.

Total Arrest of Spermatogenesis, Leydig’s cells Atrophied. X250. The Application of same dosage 0.75gm/kg for 90 days caused a marked Reduction in the Size of Testis. The Seminiferous Tubules Presented marked Degenerative Changes. The Changes Evoked in the Testis consisted of the Damage of Germinal Epithelium and Degeneration of Spermatogonia, Spermatocytes, Spermatids and Spermatozoa. Shrinkage of Seminiferous Tubules was also noticed at some places. The Interstitium was Reduced and Packed with Atrophied Leydig’s Cells. Vascularity was also Affected.

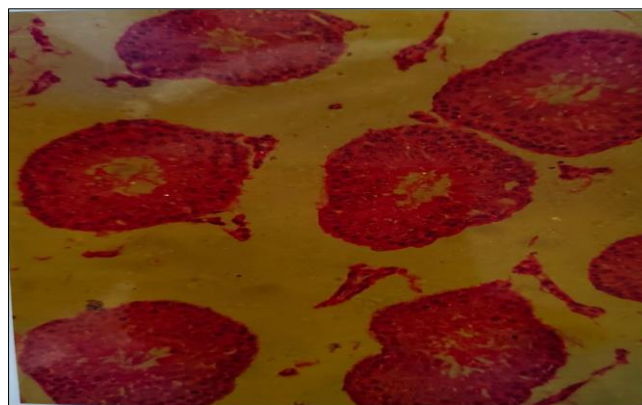


Fig 3: T.S. of Testis of Albino Rat of Treated Group with *Jequirity beans* Alcoholic extract at 0.75gm/kg Dosage for 90 Days Caused Reduction of Seminiferous Tubules, Interstitium with Large Space and Degenerated

Leydig’s Cells and No Spermatogenesis at all. X250. The Transverse Section of Epididymes of Control Group Presented a Normal Histological Picture. Epithelium of Epididymes was most Prominent. The Epithelial Cells Appeared Tall, Columnar with Nuclei arranged in a row near the thin basement Membrane. The Lumen of the Ductules was wide and provided with Stereocilia toward innerside. The Epididymal Lumen were full of Spermatozoa. Intertubular Connective Tissue and Vascularity were Normal between the Ductules of Epididymes.

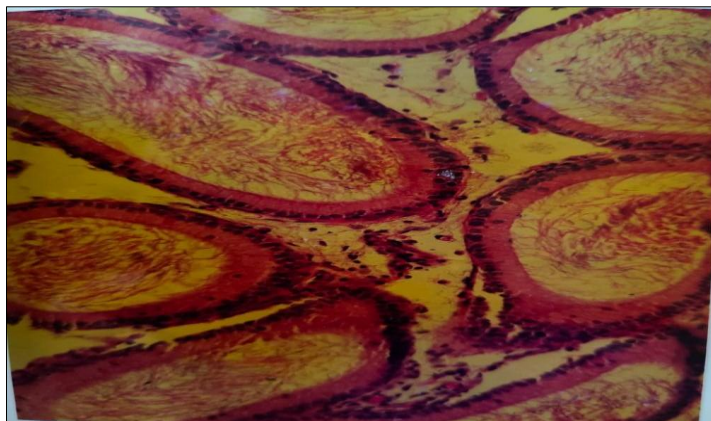


Fig 4: T.S. of Epididymis of Albino Rat of Control Group. Tall Columnar Epithelial Cells with Darkly Stained basal Nuclei, Stereocilia and Spermatozoa in Lumen of Ductules. X250.

The Epididymes of Rats Treated with *Jequirity beans* Di-Ethyl Ether Extract of Dosage of 0.75gm/kg for 45 days, Produced Marked Degenrative Changes. The Lumen of Ductules and Epithelial Cells height were Reduced in the Epididymes. Nuclear Displacement and Pyknosis were Evident. The

Stereocilia were Indistinct in the Ductules of Epididymes. There Appeared a Large Space among the Ductules but Interstitial Connective Tissues were Feeble. The Vascularity was also Affected. The Epithelium doses were distorted at certain points of Epididymes.

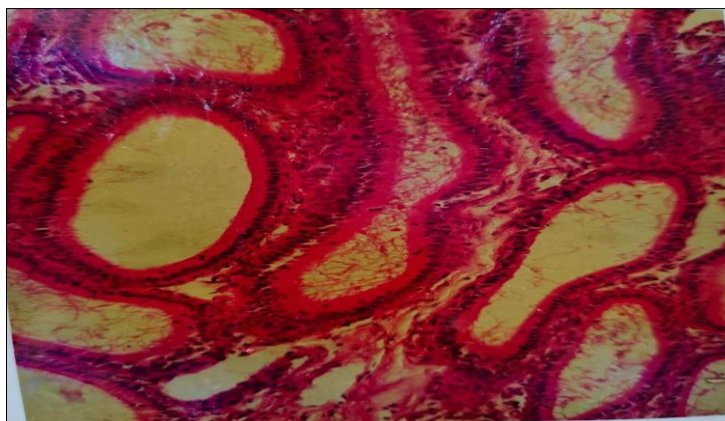


Fig 5: T.S. of Epididymis of Albino Rat of Treated Group with *Jequirity beans* Alc. Extract at 0.75gm/kg Dosage for 45 Days Caused Reduction Epithelial Cells. Stereocilia indistinct and Lumen without Spermatozoa. X250.

At 0.75gm/kg Dosage of *Jequirity beans* for 90 days, the Effects were Highly Significant. Nuclei of the Epithelial Cells Appeared Pyknotic. Some of the Epithelial Cells Appeared in the Process of Extrusion of the Nuclei towards the Tubular

Lumen. The Sperms present in Lumen were in the Process of Disintegration. The Stereocilia appeared Scanty. Luminal Sperms were almost Completely Degenerate.

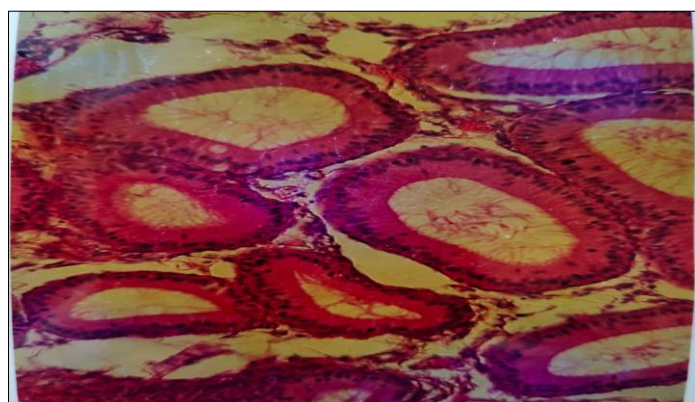


Fig 6: T.S. of Epididymis of Albino Rat of Treated Group with *Jequirity beans* Alc. Extract at 0.75mg/kg Dosage for 90 Days caused Disruption of Epithelium Cells Nuclei of Ductules, Vacuoles Formation in Epithelium and Lumen with less Spermatozoa. X250.

Acknowledgement

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