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Effect of Sildenafil citrate on spermatozoon of albino rat: A Electron Microscopic Study

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ABSTRACT

Sildenafil Citrate compound studied for it's in the male reproduction mainly fails to have useful effect, long term of this compounds have their effect on various organs and it will be bad in the regulation of physiological function in male. Sildenafil citrate is not a hormone nor an herbal supplement .It has not been properly understood and studied, whether Sildenafil citrate have effect on male reproductive organs. The purpose of the study undertaken to find the effect of Sildenafil citrate on E.M. of Spermatozoon. The objective of the present study is evaluating the effect of Sildenafil citrate on male reproduction.

Keywords- Sildenafil, reproduction, supplement, hormone, spermatozoa

INTRODUCTION

The study provides the much needed data for scrutiny by the medical community with regard to the effective, mechanism of action, pharmacokinetics, dosing and side effect of sildenafil. Sildenafil is the first effective and oral therapy for men with erectile dysfunction, (Goldstein et al., 1998). Functional impotence and achalasia are the result of too little release of nitric oxide from nerve ending which amplifies by Sildenafil citrate, (Bortolotti, 2000). Sildenafil reported having erection which meant the drug was mediating with a particular bit of body chemistry (Mestel, 1999). The discovery team this changes in erectile function was an interesting phenomenon, if fitted their data and the literature sufficiently for them to wonder if it could accurate a single dose of 100 mg. Lit all medications, (Palmer, 1999).It can cause some side effect these are usually mild and don't last longer than a few hour .In clinical trials, the vast majority of these side effects did not cause patient to this drug. The most common side effects are headache, facial flushing and upset stomach, dyspepsia, nasal congestion, (Goldstein et al., 1998). Sildenafil citrate discover the story of this drug is an interesting one it started life as a potential treatment for hypertension and then angina so how it did ? Camlbell and Robert (1985) work on hypertension that would work by inhibiting phasphodiesterase (PDE). This

hydrolyzed by GMP a vasodilator smooth muscle. The drug has potential for abuse by thrill seeker may not by transient as current data suggest. Sildenafil may also have other as yet known , adverse effects that will become evident only over time.

MATERIAL AND METHODS

Selection of experimental animal

Necessary number matured male albino rat of wistar strain of proven fertility were provided from Haffkin Biopharmaceutical.

Experimental Design

The albino Wistar male rats were divided into two group in laboratory condition, first group of experimental male rats were fed orally with Sildenafil citrate compound at a dose of 0.5mg /animal/day for 30 days and controls were orally fed with equal volume of distil water. Dosage to be administrated are decided on the basis of the literature available concerned.

Transmission of Electron Microscopy

Tissue whose ultrastructure was to be studied were removed from animals after completion of experiment, sliced into 1mm pieces in a fixative (3% Glutaldehyde), proceed for E.M. for final viewing sections were observed and photographed on Jem-100s and Joel Electron Microscope.

RESULTS AND DISCUSSION

Electron micrograph of seminiferous tubule, spermatozooan, acrosomal cap of the spermatozoan of 30 days of control rats compared with experimental rat. Greep et al. (1936) and Greep and Fevold (1937) have given evidence that the GH hormone ,FSH , LH, secreted by the two gonodotroph stimulated the seminiferous tubule and the interstitial cell respectively to promote spermatogenesis, but Sildenafil citrate treatment may be decreased in circulating gonodotrophin observed, also decreased in the fertility of treated rat also points to the reduction in gonadotroph levels which are a prerequisite for normal fertility. In the present study increased androgen level also point toward the effect of sildenafil citrate on the metabolic clearance rate of circulating androgen. FSH appears to be required for the initiation but nor for maintainance of spermatogenesis. But FSH also appears to be necessary for the maintenance of spermatogenesis, Steinberger(1971) as could be shown by passive immunization against FSH, (Murthy et al. 1979).

Control

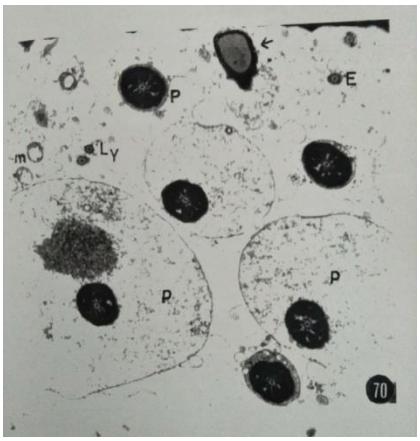

Fig1

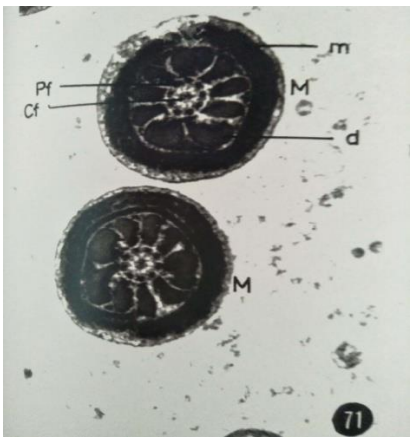

Fig 2

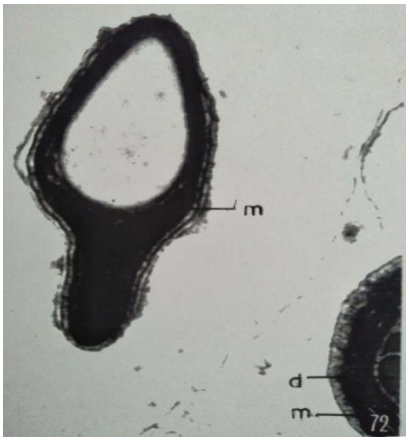

Fig 3

Fig-1: Electron Micrograph of seminiferous tubule of control rat showing various stages of spermatids , Longitudinal section of the step 16 spermatid clearly visible (arrow) Mitochondria (m) few lysosome body (Ly) Note the cross section of spermatozooan , through mid-piece with plasma membrane area. Note mitochondrial sheath with dense fibrils, peripheral fibrils and central fibril . X 10,000

Fig-2: Hig**h** power electron micrograph of seminiferous tubule of control rat showing spematozooan .note cross section of spermatozoons through mid-piece area with nine outer fiber surrounded by highly organized mitochondrial sheath (m), central fibers(Cf), Peripheral fibrils (pf) , dense fibrils(d) X30,000

Fig-3: Electron micrograph of control rat seminiferous tubules showing front view through the longitudinal section of the acrosomal cap of the spermatozooan. Note the filament and interposed between two flattened membrane bounds cisternal space , also note the part of T.S. of Spermatid clearly indicate the mitochondrial sheath (m) and dense fiber (d) X40,000

Experimental

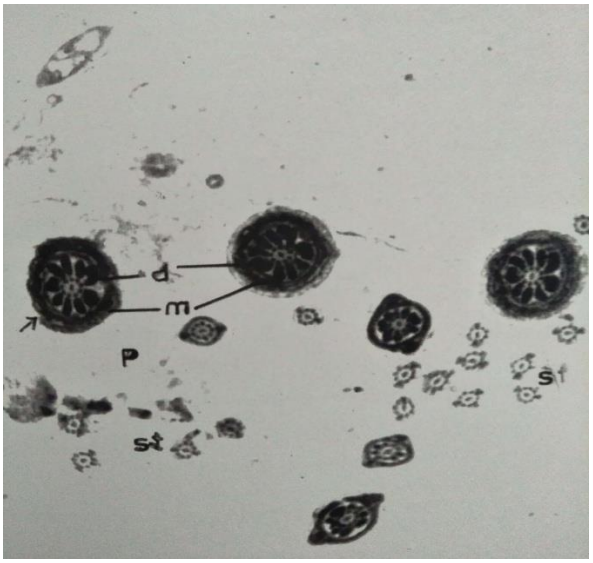

Fig-4

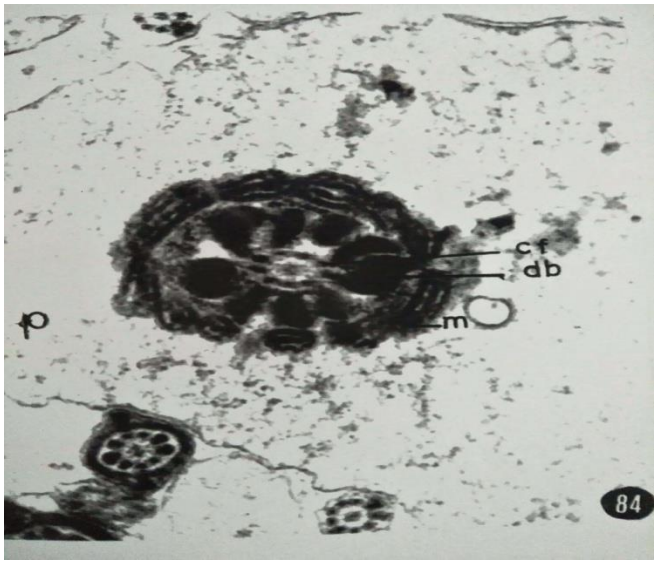

Fig-5

Fig-4-Electron micrograph of the seminiferous tubule of the 30 days sildenafil citrate treated rat showing group of spermatozooan. Note the cross section of spermatozoon with the plasma membrane (p), Mitochondria (m), dense fibers(d). also note the distal part of the maturing spermatozoa in transverse section, also note the defect in mitochondrial sheath of the spermatozoon (arrow) X12,000

Fig-5-High power electron micrograph of seminiferous tubule of the sildenafil citrate treated rat showing cross section of spermatozoon through the mid piece area, note nine outer dense fibers(db) surrounded by disorganized mitochondrial sheath (m), also note the central fiber (Cf) and transversely cut spermatozoons with their internal structure which can be seen at various levels. X30,000 .

There in clinical evidences the patient requires that FSH necessary for spermatogenesis. There may be two possibilities either blood flow increases testosterone .The rate of secretion of testicular steroids depends on the rate of blood flow in the spermic artery, Eik-Nis (1964) and it has in fact been suggested that under physiological condition, steroidogenesis. Above discussion observed considerable decrease in plasma FSH after administration of Sildenafil citrate.

CONCLUSION

The consideration of treatment of Sildenafil citrate, ultrastructural studied and observations however the stress should be laid in future studies on the accelerated mitochondrial function.

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