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Renal Histology of Chloroformic Extract of *Abrusprecatorious*on Albino Rats (*Rattus norvegicus)*

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Abstract—*Abrus precatorious, family Fabaceae is used in many parts of the world as contraceptive and abortifacient. Medicinal plants represent a consistent part of the natural biodiversity endowment of many countries in Africa (Okigbo etal.2008). The medicinal properties of plants could be based on the antioxidant, antimicrobial, antipyretic effect of the photochemical in them (Cowman 1999; Adesokanetal. (2008).*

Method- *The rats were divided in experimental and control groups of 8th animals each out of these two groups of set I, group I, served as normal group, set II, group II served as chloroformic extract of Abrus precatorious seeds of dose 20 mg/rat/day for 15 days and 30 days respectively. After 15 days and 30 days treatment the animals were starved for 24 hours and then scarified by decapitation.*

Result- *No significant changes were observed in renal tissues of animals.*

Keywords - *Biodiversity, Antimicrobial, Phytochemical, Contraceptive.*

Introduction –Medicinal plants are plant containing inherent active ingredients used to cure disease or relieve pain **(Okigboetal. 2008).** The medicinal properties of plants could be based on the antioxidant, antimicrobial, antipyretic effects of the phytochemical in them **(Cowman 1993; Adesokan. 2008).**

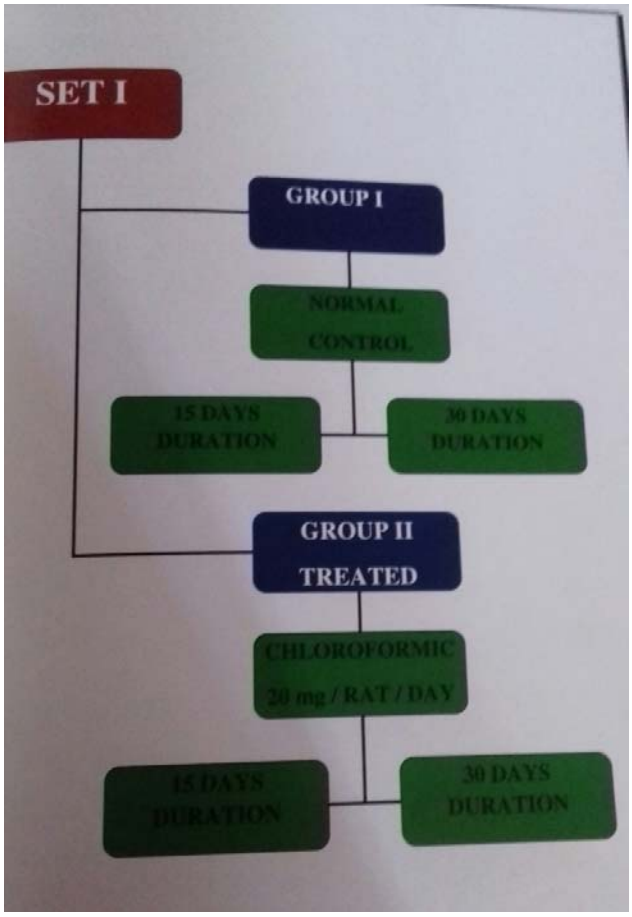
*Abrus precatorius*is the member of family leguminous with characteristic red and black seeds. In India, it is commonly known as Ratti, Aainud-dik, Chunhati, Crab's eye, Guja, Rosary pea, Precatory bean etc. The leaves, roots and seeds of *Abru sprecatorius* are used for medicinal purposes, a practice most probably dating back to antiquity **(Ivon, 2003).** Pharmacological activities and clinical trials proved that this plant possesses antifertility, agglutinin, analgenic, antithetical, antibacterial and antidarrhoel activity, anti estrogenic effect, antifungal activity, antispermatogenic effect, antitumor and antiviral activity, CNS activity etc.

Nephrotoxicity is one of the most common kidney problems and occur when the body is exposed to a drug or toxin that causes damage to the kidneys, When kidney damage occurs, the subjects are unable to rid off their body excess urine, and waste. The blood electrolytes (such as potassium and magnesium) will be become elevated. Many traditional medicines and foods especially in the tropical regions of Africa and Asia contain renal toxic plants. One such food medicine is the djenkol bean. The most dramatic and highest profile case of herbal nephrotoxicity occured from 1990- 1992 in over 100 people in Belgium who ingested a Chinese weight loss slimming remedy containing aristolochic acid principally from the plant *Aristolochiafangchi (***Vanherweghemetal. 1993).**

Seventy of these patients required renal transplants or dialysis and 30 subsequently developed urothetical carcinoma. In 2000, the FDA identified two new cases of interestial renal fibrosis from aristocholic containing herbal products. The resulting nephropathy to as "**aristolochic and nephropathy"** or less accurately " **Chinese herb nephropathy".** The kidney is the major target organ for toxic compound. The kidney can also produce metabolites that will be toxic the other or tissuse.

Material and Method –

Experimental animals - Pure strains of sexually mature albino rats (*Rattus norvegicus*) were kept under laboratory conditions on standard mouse pellet diet and water ad libitum. Experiment was carried out on albino rats weighing 50- 150 gm.

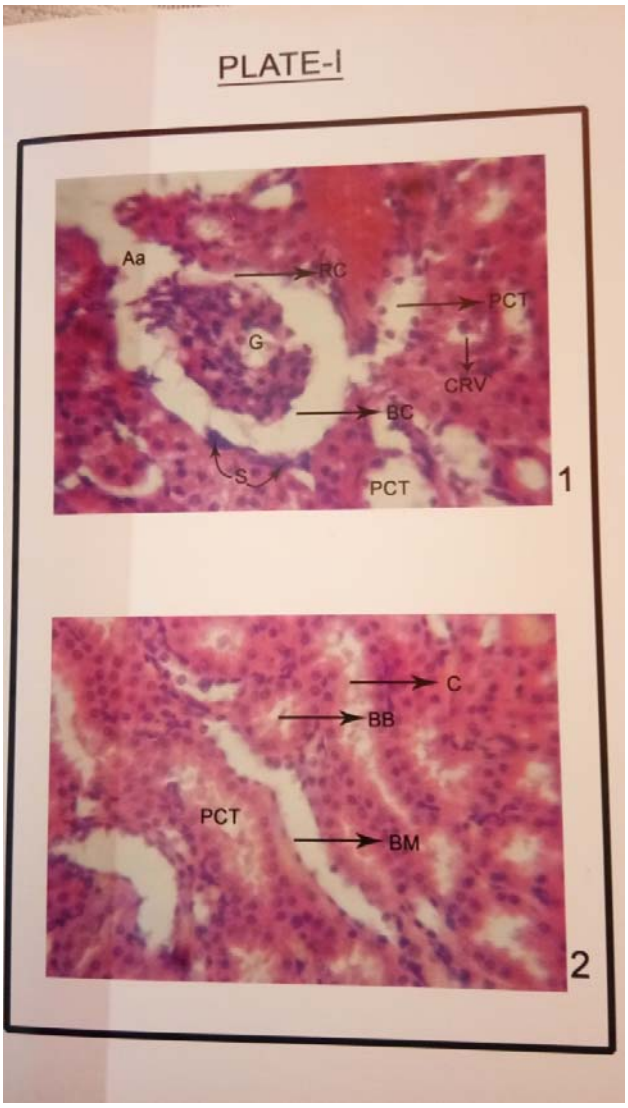


The rats were divided in experimental and control groups of 8 animals each. Out of these two groups of set I, group I, served as noralcontrol group, set II, group II served as chloroformic extract of *Abrusprecatorius*seeds of 20 mg/rat/day for 15 and 30 days respectively. After 15 and 30 days treatment the animals were starved for 24 hours and then sacrified by decapitation.

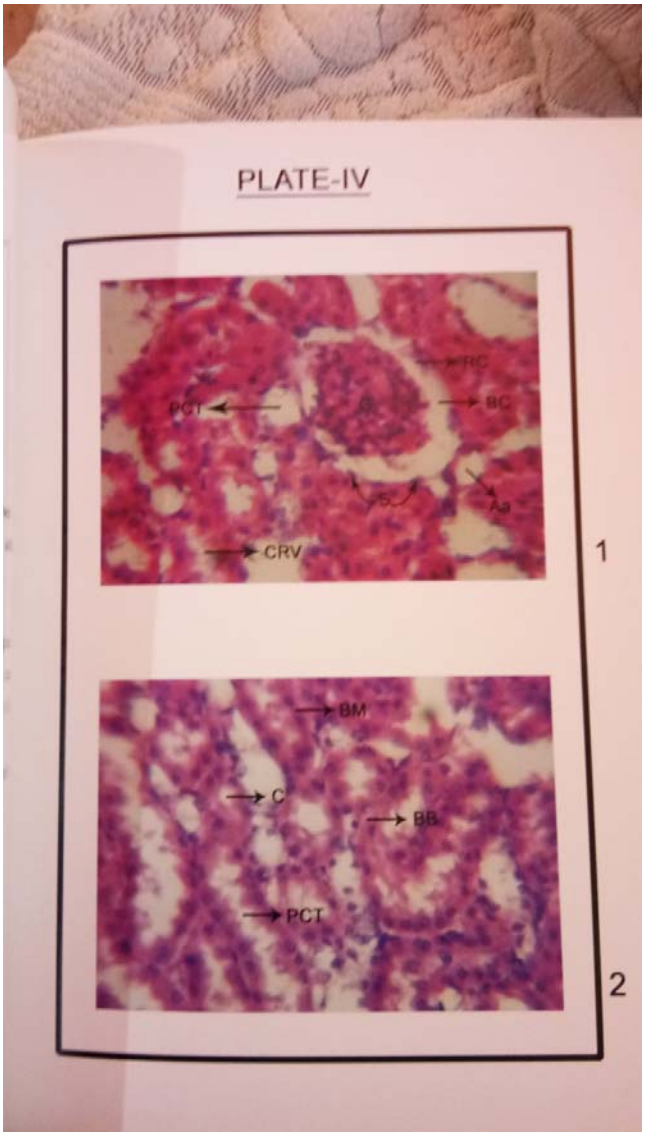
Histological studies-

For histological studies, small pieces of kidney were fixed in Bouins- HallandeSublimate. After fixing, the tissues were thoroughly washed in running water. The tissues were rapidly dehydrated, cleared in sulphur free xylene and embedded, after making proper orientation,in ceresin rich paraffin wax of 56 to 60 m.p from BDH. This tissues blocks were trimmed. Transverse sections of 6- 10 um (micrometer) thickness were cut on " Sartorios rotary microtome" and stained with Iron album Haematoxylin and eosin.

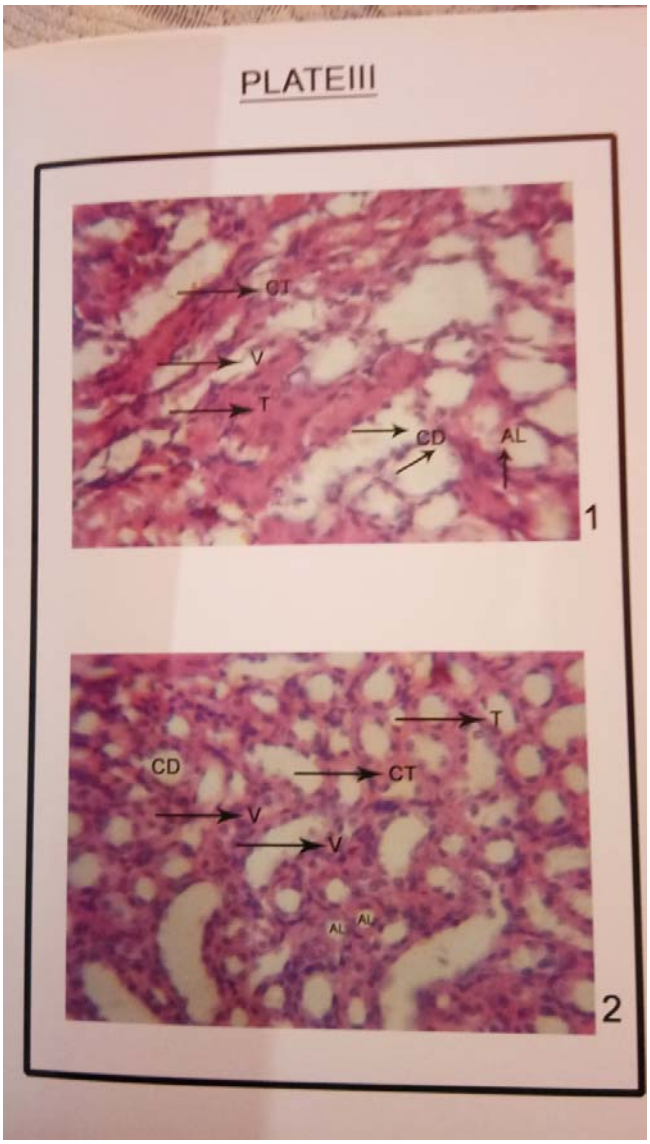
Photomicrograph of T.S kidney of control albino rats showing cortex region.



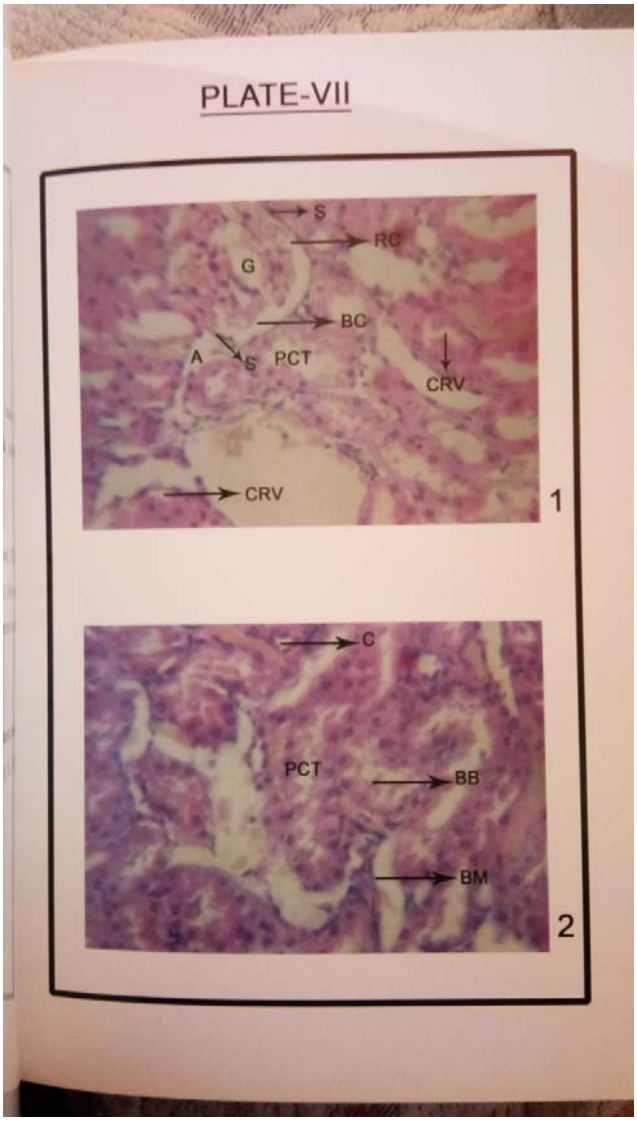
T.S of kidney of albino rats treated with chloroformic extract of *Abrus precatorius* seeds after 15 days of administration showing cortex region



Photomicrograph of T.S kidney of control albino rats showing medullary region



T.S kidney of albino rats treatment with chloroformic extract of *Abrus precatorius* seeds after 30 days of administration showing cortex region.



Result and Discussion - The parenchyma of each kidney is composed approximately one million microstructues called Nephrons. A nephrons, in turn, consists of 5 major parts, each having a functional role in the formation of urine, the glomerulus's capsule (glomerulus's) and Bowman's capsule, the proximal convoluted tubule (PCT), the loop of henle, the distal convoluted tubule(DCT) and the collecting duct. From point of view of disease of the kidney, 4 components of renal parenchyma require elaboration, renal vasculature, glomeruli, tubules and interstitium (Mohan Harsh, 2005). The cortex shows faint striations called medullary rays formed by the collecting tubules, asending limbs and straight portions of the proximal convoluted tubules.

Histological studies revealed that the kidney sections of control group of albino rats showed normal histoarchitecture which was characterized by Bowman's capsule (BC) consists of a single layer of flattened cells resting on a basement membrane (BM). It is derived from the distended blind end of the renal tubule (plate-I, fig-1&2).

Proximal convoluted tubules were normal and brush border cells were normal in shapes and number (Plate- IV, fig-1&2). No changes were observed in collecting tubules, Asending limb, Thin limb and Vasa recta (Plate-III, Fig- 1&2) in control group.

After 30 days of administration of chloroformic extract of *Abrusprecatorius*seeds the findings were almost similar (Plate-VII, Fig-1&2).

In the animal administered orally with a dose of 20 mg/rat/day of chloroformic extract after 15 days and 30 days, no significant changes were observed in renal tissues of animals. These extracts caused no changes in glomerulus and Bowman's capsule, Proximal Convoluted tubules, Distal Convoluted tubules, the loop of henleand the collecting tubules were normal in histology no cyst or necrosis was seen. These findings are in agreement with the findings of **Adhikari*etal.* (1989)** who reported no toxic effect on liver and kidney caused on administration of *Piper bettle*Linn. Stalk in albino rats.

Similarythese findings are agreement with the findings of **Rajarame*tal.* (1992)** and **Ivan (2003)** who observed that aqueous extract of seeds of *Abrusprecatorious* have protective effect against alcohol induced renal damage and its effects is related to a reduction in alcohol induced peroxidation. These findings are also in agreement with the findings of **Young and Meciejewkshi (1997)** who have reported similar result with crude extract stem and bark of *Mangiferaindica.* These findings are also similar to the findings of **Gosh and Suryawanshi (2001)** who reported the regeneration of kidney parenchyma with crude extract of *Vincarosea*leaf and flower (VRL & VRF) in diabetic kidney of albino rats.

These observations are also in agreement with the observations of **Shirwaikar*etal.* (2003)** who have reported the flower of *Ponganiapinnata*have a protective effect against Cisplatin and Gentamin induced renal injury in rats. **Gupta *etal.* (2008) and Wurochekke*etal.*(2008)** also similar results with the aqueous stem bark extract of *Xemeniaamericana*in rats respectively.

Ligha*etal.*(2009) reported the aqueous extract of the seeds od *Abrusprecatorious*protect the kidney against alcohol induced parenchyma injury. These observations are agreement with the observations of **Prasad *etal.* (2009)** who have reported the aqueous leaves extract of *Murrayakoenigii, psidium guajava*and*Catharanthusroseus*causes no significant histological changes of kidney in Streptozotocin induced diabetic rats.

However, **Akdogan*etal.*(2003)** reported the hydropic degeneration of tubular epithelial cells, the epithelial cytoplasm, tubular dilation and enlargement in Bowman's capsule on administration of *Menthapiperita*Linn. And *Menthaspicata*in rats. **Ganesan*etal.* (2007)** reported that *Helicteresisora*bark extract has the antihyperglycaemic effect and consequently may alleviatr liver and renal damage associated with **Streptozotocin**(STZ) induced diabetic rats. These findings contradict the findings of **Bakhiet and Adam (2007)**observed enterohepatonephro toxicity on administration of *Cassia italica*seeds in Bovans Chicks.

Jaykaran*etal.* (2009) also observed significant abnormality in liver and kidney on administration of aqueous extract of *Ficusracemosa*Linn. Bark in albino mice.**Al- Attar M.A (2010)** reported that oral administration of alfalipic acid producea significant antihepatotoxicity and nephrotoxicity effects in **Malathion**treated rats. **Vengaiah*etal.* (2014)** reported the betal leaf stalk extract might possible inhibit the activity of adenosine triphosphate (ATP) in the spermatozoa by uncoupling of oxidative phosphorylation from the respiratory chain and prevent phosphorylation of adenosine diphosphate to ATP and thus renders the spermatozoa immotile.

Nuha ME.Agabna*etal.* (2016) reported the ethanol seed extract of *Abrusprecatorius*causes strong uterine contraction, disrupts the estrous cycle reversibly and reduces the progesterone levels. **ShaziaTabassum*etal.*(2016)** observed the result of the study highlighted a potent phenol, flavonoid and alkaloid conttents in the crude extract and thus can be used to explore new drugs. The study also justifies some of the plant medicinal properties of the plant.

Mahre M.B *etal*(2017) observed the methanol seed extract of *Abrusprecatorius*contain important phytochemical constituents possessing pharmacological activities and it is relatively safe but has no effects on sperm. **Vengaiah*etal.* (2014)** reported the betalleaf stalk extract might possible inhibit the activity of adenosine triphosphate (ATP) in the spermatozoa by uncoupling of oxidative phosphorylation from the respiratory chain and prevent phosphorylation of adenosine diphosphate to ATP and thus renders the spermatozoa immotile. **Tanaya Gosh *etal.*(2017)** also reported that by solvent extraction, acid hydrolysis, chromatographic experiments followed by crystallization a compound (AP-II) was isolated from the leaves of *Abrusprecatorius*Linn. The compound could exert body weight loss in albino rats. Body weight loss started from 10^{th} day bit significant loss was observed from 20^{th} onwards.

Conclusion –The earlier studies made in this laboratory have proved that the seeds of this plant have shown its male contraceptive effects and no Hepatotoxic effects. There are chances to develop a suitable male contraceptive pill from this plant. This is possible if the drug prepared have no toxicological effects on other vital organ like liver, kidney of the body.

The chloroformic extract of this plant caused no significant changes in the histology of kidney. These extracts caused no changes in glomerulus's and Bowman's capsule. Proximal convoluted tubules, Distal Convoluted Tubule, The Loop of Henle and theCollecting Tubules were normal in the experimental animals. So, the observations indicate no histological changes in the kidney.

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