

Hibiscus rosasinensis depart no baleful effects on histomorphology of Kidney of Swiss Albino mice

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ABSTRACT

The present study was undertaken to evaluate the medicinal properties of *Hibiscus rosasinensis* on mice. For the research White Swiss albino mice were orally administered *Hibiscus rosasinensis* flower (500 mg/kg body weight) and effect of the treatment on the kidney was observed. Crude extract of the *Hibiscus rosasinensis* possess the potentiality to act against many disorders or diseases which can easily be treated by this plant. But whether the flower of the plant is detrimental for the kidney or not is yet to be established by the scientists. Through this research, it is suggested that there was no remarkable changes in the kidney. The parenchyma in the treated group was same as the control group without having any inflammation or necrotic degeneration or edema. There was no tubular necrosis in the kidney. But the only thing that was observed here is deposition of the adipose tissue or fat deposition in a portion of the kidney glomeruli of the treated group.

INTRODUCTION

In this Indian subcontinent the use of the different parts of the medicinal plants to cure the specific ailments has been in vogue from the ancient times (Mishra et al., 2009). These days herbalism is increasing as an alternative medicine since it makes healthcare affordable for all. It is believed that the mixture of several crude extracts, when used in formulation enhances the beneficial effects through synergistic amplification and diminishes any possible adverse effects. Williamsons further emphasized this concept that a whole or partially purified extract of a plant offers advantage over a single isolated ingredient (Williamson, 2001).

Hibiscus rosasinensis is commonly known as chinesis Hibiscus or tropica. This is a native of China and is a potent medicinal plant. It is common garden perennial plant /shrub (Mudgal, 1974). *Hibiscus rosasinensis* flower showed antispermatogenic, androgenic, antiimplantation, antihypercholestoremic, antitumor, anticonvulsant, antihypertensive, antioxidant, antiammonemic and

antihypertension activities (Mishra et al., 2009, Pal et al., 1985, Murthy et al., 1997, Hirunpanich et al., 2006, Essa and Subramanian 2007, Herrera et al., 2004, Reddy et al., 1997, Mathu et al., 1990, Chang et al., 2006). Leaves and flower also possess hyperglycemic activity (Pekanwal et al., 2013). The present study is the most specialized research ever to find out the effect of the aqueous extract of flower of the *Hibiscus rosasinensis* on the kidney of Swiss albino mice.

MATERIAL AND METHDOS

Twenty (20) Swiss albino mice (at the age of 6-7 weeks and avg. weight 27-28 gm) was collected from ICDDR,B, Mohakhali, Dhaka and was divided into two (2) groups such as control (C) and treated (T) groups, each having ten (10) mice. Before starting the experiment the mice were reared normally in the aluminium cage for 7 days so that they can easily accustomed with the environment. At the age of the 8th week the experiment was started. The control group was fed with the normal mice pellet and water whether

the treated group was given extract of *Hibiscus rosasinensis* flower along with the mice pellet and water.

For the preparation of the extraction the flower was collected from the local garden and was dried in the sunshine. After that the powder of the flower was made by mortar and pestle. Then the powder was mixed with distilled water for the preparation of aqueous extract of the flower (500 mg / 30 ml of distilled water). The treatment of the mice of group T (treated) was done by this extract. The treatment was continued for 30 days and during the period all the management practice was uniform for both the groups. After the experimental tenure the mice (both the control and treated groups) was sacrificed ethically and the

sample (liver) was collected, processed, stained and observed under the microscope for investigating the architectural deviation from the normal.

RESULTS AND DISSCUSSION

The histoarchitecture of the kidney of the control group revealed that the glomerulus was normal in appearance. The Bowman's capsule was normal in appearance (Figure 1). The Macula densa (MD) and juxtaglomerular apparatus were in a normal architecture. The tubular structures were also in a regular appearance. Loop of Henley's was present at a usual pattern. Blood vessels (BV-arrowhead) were also present there in huge amount.

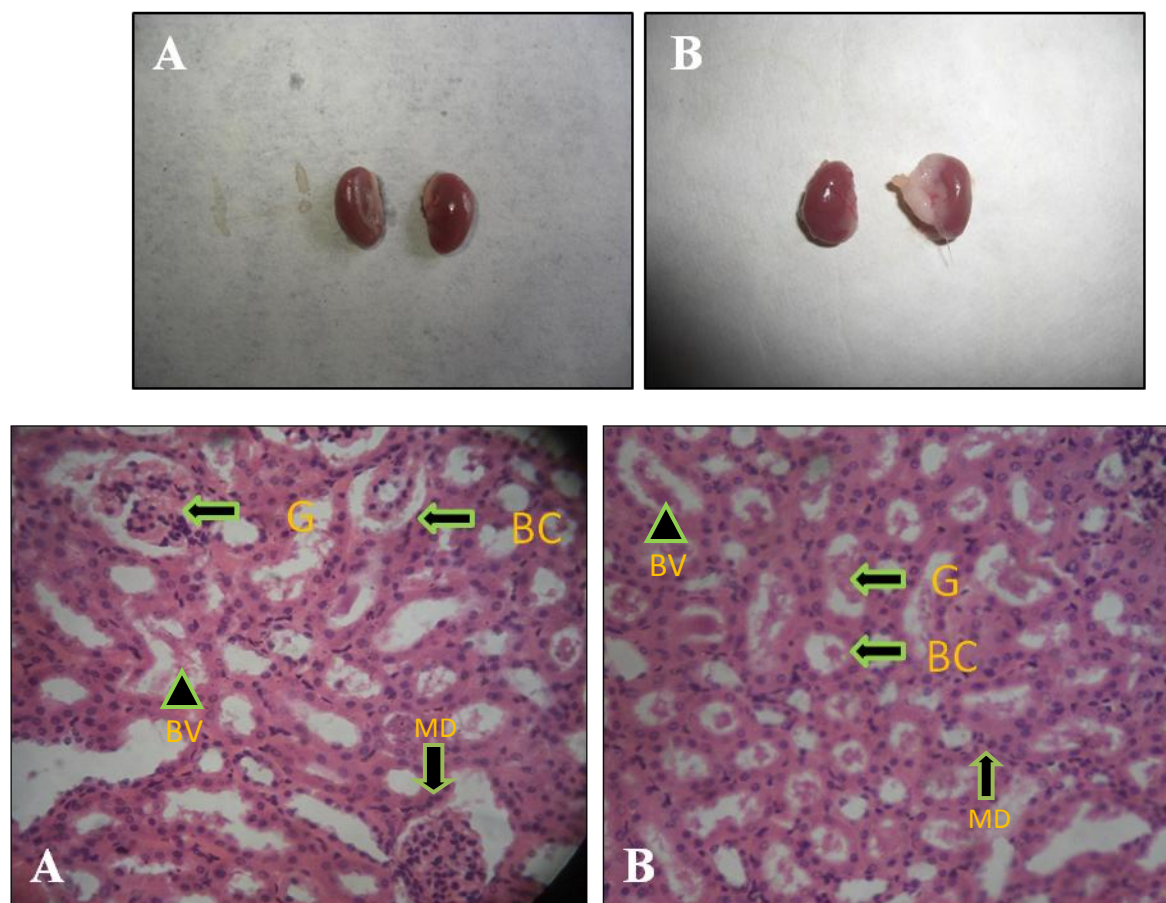


Figure 1

Gross appearance of kidneys (Upper left-control; upper right-treatment); Histological features of the kidney with normal glomerulus (G), Bowman's Capsule (BC) and parenchyma, H & E X10

In the treated group (T) there was no deviation from the normal. The medulla and cortex were well defined. Glomerulus was normal in appearance; the macula densa and Juxtaglomerular apparatus also remain in the same condition as it was in the control. There was no infiltration of the lymphocytes due to any inflammatory lesion. No edema was found in the glomerulus. No necrotic lesion was found in the tubular parts of the kidney as well. But the only abnormal or deviated lesion that was found in the medullary part of the kidney was deposition of the extra adipose tissues or fat droplets (Figure 2).

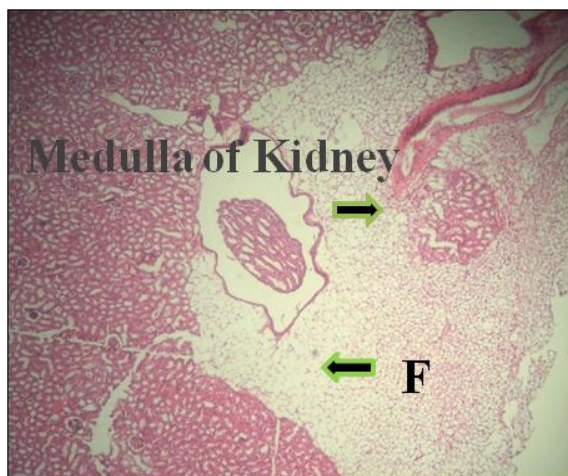


Figure 2
Histological feature of the kidney with deposition of fat droplets (F), H & E X10

Hakim et al., (2013) declared that after the treatment by the *Hibiscus rosasinensis* @ 500 mg/kg body weight there was no lesion found in the kidney which had the similarity with the findings of the present research. But there was no mention of findings of having the deposition of the adipose tissue or fat droplet in the medulla, but such findings were not found in the present research, it might be due to the selection of the experimental animal as Hakim et al., chose rats as the experimental animal and also used the benzene extract of the plant, but the present research was done by using Swiss albino mice and aqueous extract of the plant was used.

Kidney of mice treated with 12.5mg/kg of the extract for 21 days showing widespread glomerular and tubular necrosis with a pinkish

deposit in the lumen of proximal convoluted tubules and cloudy swelling of the renal epithelium were found according to Saganuwan and Patrick (2010), these findings were not present in the present research as Saganuwan and Patrick did their research with *Abrus precatorius* extract.

The findings of the present research also had the similarity with that of the Emelike et al., (2014), as they did not find any significant alterations in the kidney. But they did their research by using the rats.

CONCLUSION

From the aforesaid results of this research it is indicated that the extract of *Hibiscus rosasinensis* @ 500 mg/kg body weight does not alter gross and microscopic histology of kidneys in Albino mice. However, further research regarding the standardization of the dose, different functional tests of kidney following administration of this plant extract in animal and human are necessary. .

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