

The Effect of OCRA (Abelmoschus esculentus) Ethanollic Extract on Leydig Cells in Mus musculus

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The Effect of OCRA (*Abelmoschus esculentus*) Ethanolic Extract on Leydig Cells in *Mus musculus*

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Abstract

Twenty four BALB/C *Mus musculus* were randomly divided into four groups. The control groups received (CMC-Na 0.5% suspension), The treatment groups T1, T2, T3 were given 200, 400 mg and 800 mg/kg bw (*Abelmoschus esculentus*) ethanolic extract) for 52 days, respectively. The number of necrosed Leydig cells significantly differed between the treatments, except T1 It was concluded that the *Abelmoschus esculentus* ethanolic extract can reduced the number of Leydig cells in the testis.

Key words: *Abelmoschus esculentus*, *Mus Musculus*, Testicle, Leydig cells.

Today, one of the famous herb is Ocra (*Abelmoschus esculentus*) (Mihretu *et al.*, 2014). Jarret *et al.* (2011) and Malakannavar (2011) said that *Abelmoschus esculentus* seed oil contains a polyphenolic compound which is called gossypol. Gossypol has infertility effect for male. Gossypol in *Abelmoschus esculentus* can decrease the weight of the testicle and cause degeneration of the testicular tissues (Uchenna *et al.*, 2014).

Materials and Methods

Twenty four BALB/C *Mus musculus* were randomly divided into four groups consisting of 6 animals in each. The control group C received CMC-Na 0.5% suspension, T1, T2 and T3 groups received 200, 400 and 800 mg/kgBW/day of *Abelmoschus esculentus* ethanolic extract, orally for 52 days in that order.

After 52 days of treatment, the right testicles were collected. The selection of right testicles were done to avoid bias (Kapsul, 2017). Testicler tissues were processed and stained with Hematoxylin-Eosin.. Histopathological examination of the testicle was done to calculate the number of Leydig cells on five different fields under microscope (Olympus® CX-21) with 400x magnification. The data was analyzed by ANOVA test followed by Duncan's test using-Statistical Product and Service Solutions (SPSS) program 25.

Results and Discussion

The mean value of necrosed and normal Leydig cells is furnished in in Table I.

Table I. The mean value of necrosed and normal Leydig cells

Treatment	Necrosis Leydig Cells (mean±SD)	Normal Leydig Cells (mean±SD)
C CMC-Na 0.5% suspension	1.80 ^a ± 0.24	18.24 ^c ± 3.63
T1 <i>Abelmoschus esculentus</i> ethanolic extract 200mg/kgBW	1.84 ^a ± 0.62	14.80 ^{bc} ± 2.96
T2 <i>Abelmoschus esculentus</i> ethanolic extract 400mg/kgBW	2.28 ^a ± 0.33	11.28 ^{ab} ± 0.98
T3 <i>Abelmoschus esculentus</i> ethanolic extract 800mg/kgBW	3.16 ^b ± 1.04	8.40 ^a ± 2.30

Different superscript indicate significant differences (p<0.05).

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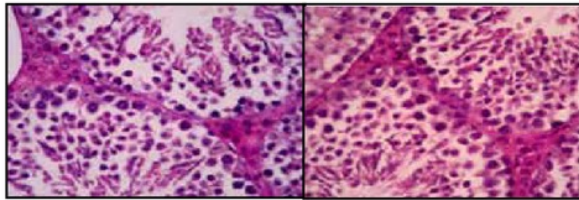


Fig 1. Testis Leydig cells C = control group normal histology of the testicle; H and E x 400 T1 group increased the necrosis of Leydig cells.

High level of gossypol could cause poisoning. Clinical signs of gossypol poisoning were caused by decreasing the antioxidants in the tissues and increasing reactive oxygen species (ROS) formation. This condition was called oxidative stress which could cause lipid peroxidation (Gadelha *et al.*, 2014).

The process of lipid peroxidation would decrease Sodium-Potassium pump activity, dysregulated cell volume and increased intracellular calcium. Increased intracellular calcium might activate several enzymes which play a role in cell death such as proteases, phospholipases, ATPases and endonuclease. Feeding ethanolic extracts of Ocra had progressively decreased the Leydig Cells in *Mus musculus*.

Leydig cells progressively decreased in each group in the order of C-T1, T2 and T3. Decreased Leydig cell number revealed necrosed Leydig cells (Fig 1).

Bilodantu *et al.* (2016) argued that gossypol could decrease the number of normal Leydig cells due to degeneration of Leydig cells.

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