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***Phyllanthus emblica* leaf extract ameliorates testicular damage in rats with chronic stress**

Key words: *Phyllanthus emblica* L. leaf extract, Chronic stress, Testicular damage, Tyrosine phosphorylation

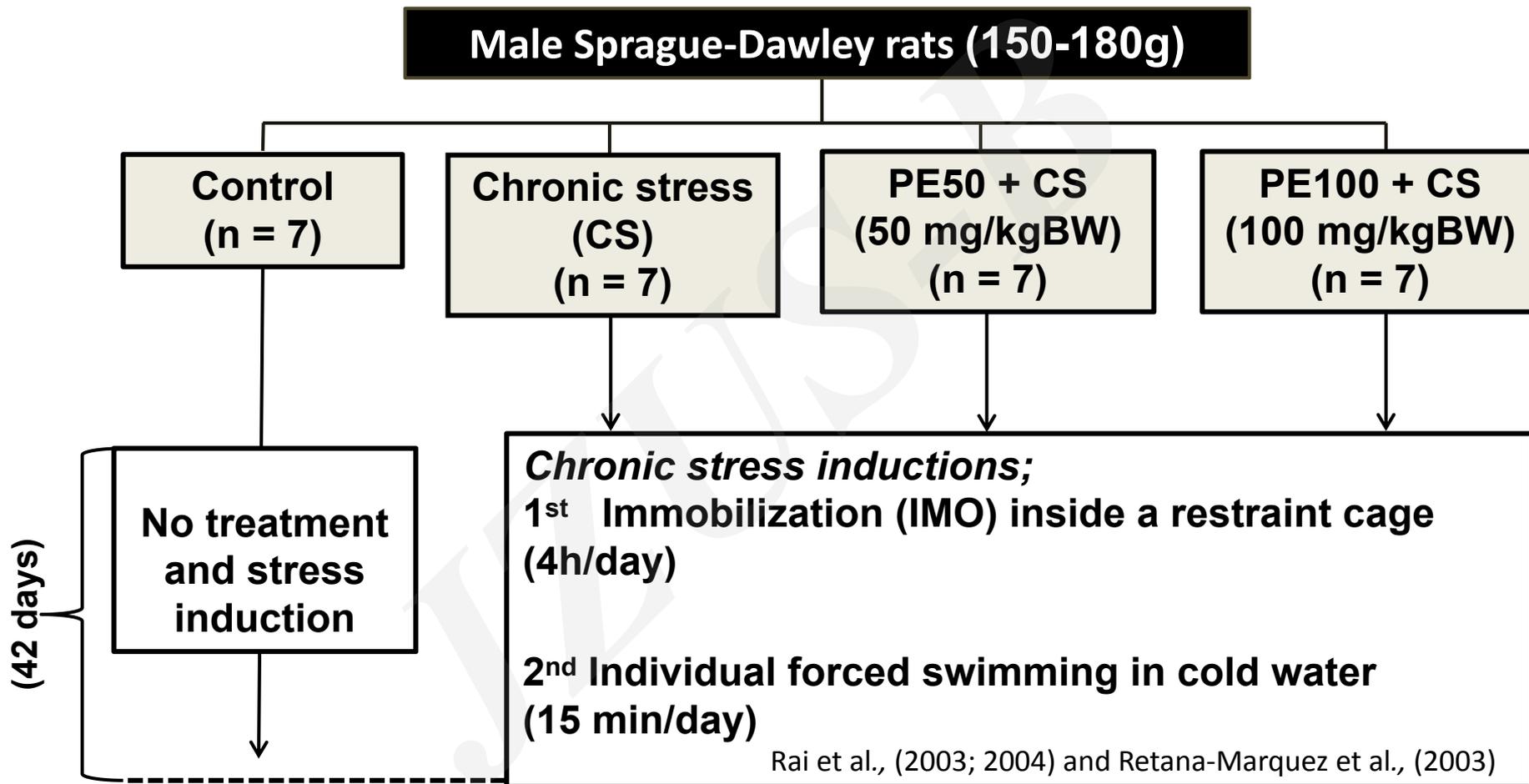
Research Summary

This study mainly focused on the effects of PE aqueous leaf extract on testicular impairment and protein marker changes in rats suffering from chronic stress in the following aspects;

- Testicular histopathology and sperm parameters
 - Corticosterone and testosterone levels
 - Testicular MDA level
 - Expressions of functional testicular proteins



Experimental design



Results

A series of comprehensive tables and figures shows the summary about PE protective effect on the reproductive parameters in chronic stress rats.

Fig. 1 | Effects of PE leaf extract on serum corticosterone levels

Fig. 2 | Effects of PE leaf extract on body weight and the morphology of male reproductive organs

Table 2 | Effects of PE leaf extract on reproductive organ weight, testosterone level, and sperm parameters

Fig. 3 | Effects of PE leaf extract on the histology of the testes and epididymis

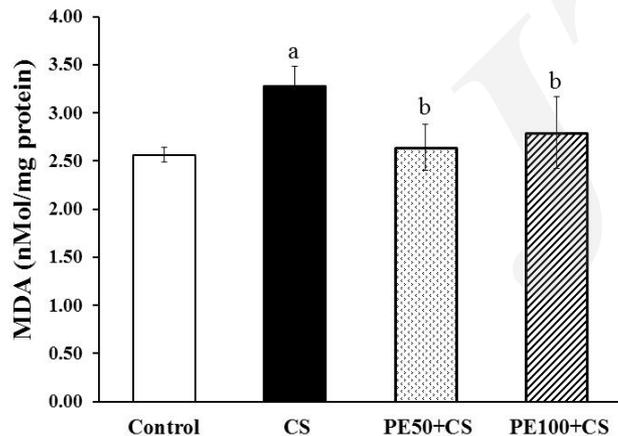
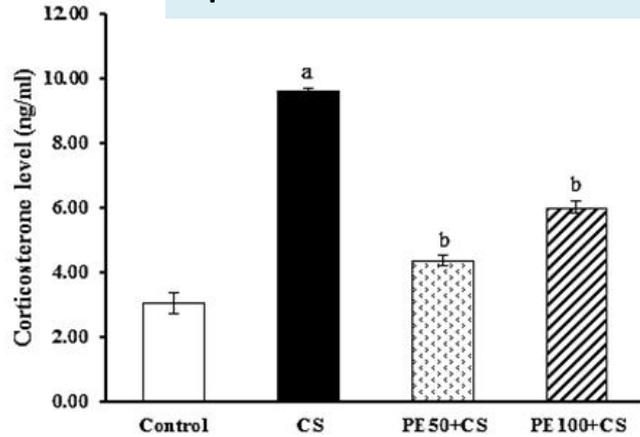
Fig. 4 | Effects of PE leaf extract on malondialdehyde levels

Fig. 5 | Effects of PE leaf extract on expression level of testicular StAR protein

Fig. 6 | Effects of PE leaf extract on expression patterns of tyrosine phosphorylated proteins

Results

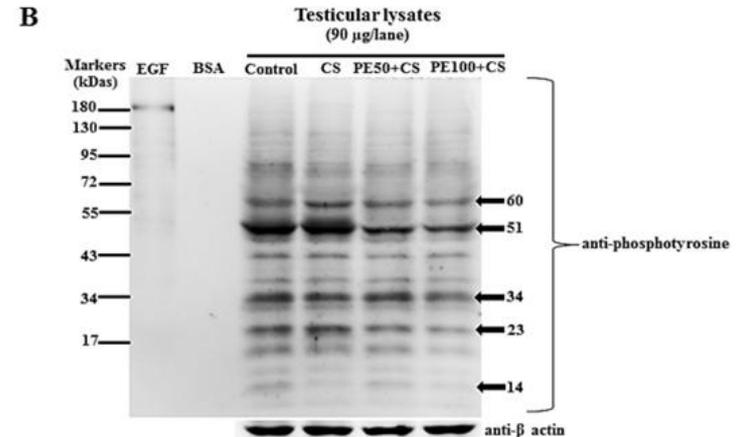
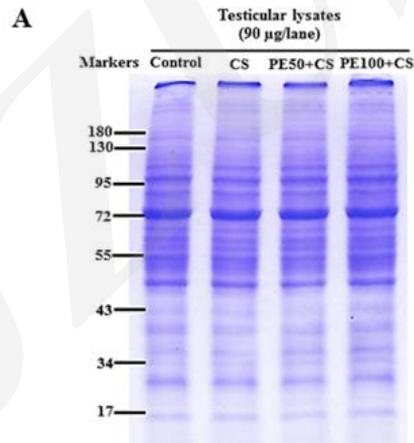
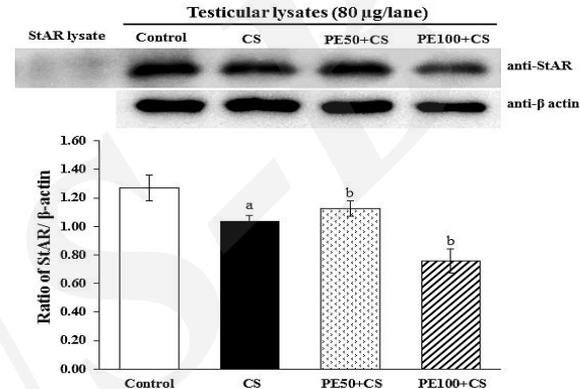
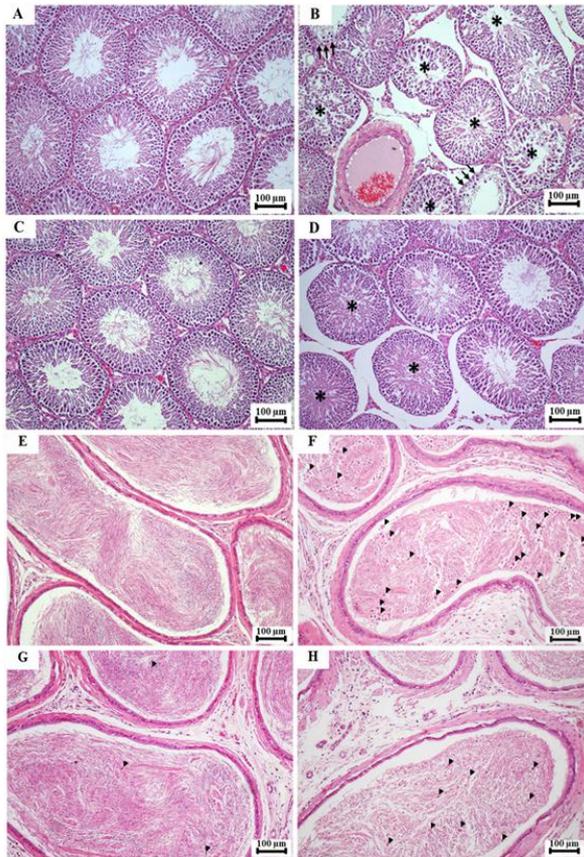
PE (50 mg/kgBW) significantly increased sperm concentration and testosterone levels, while decreasing corticosterone levels, MDA levels, sperm head abnormalities (%), and acrosome reacted sperm (%) in CS rats.



Parameters	Control	CS	PE50+CS	PE100+CS
Testis				
Absolute weight (g)	1.93 ± 0.16	1.50 ± 0.26 ^a	1.71 ± 0.11	1.64 ± 0.06
Relative weight (g/100g)	0.52 ± 0.01	0.48 ± 0.09	0.51 ± 0.03	0.52 ± 0.06
Epididymis plus vas deferens				
Absolute weight (g)	0.67 ± 0.06	0.54 ± 0.05	0.56 ± 0.04	0.57 ± 0.03
Relative weight (g/100g)	0.16 ± 0.00	0.17 ± 0.01	0.17 ± 0.01	0.18 ± 0.02
Seminal vesicle plus prostate gland				
Absolute weights (g)	1.90 ± 0.14	1.86 ± 0.15	1.94 ± 0.18	1.90 ± 0.24
Relative weight (g/100g)	0.51 ± 0.01	0.56 ± 0.03	0.57 ± 0.04	0.63 ± 0.01
Testosterone level (ng/ml)	4.97 ± 1.77	1.02 ± 0.01 ^a	1.39 ± 0.21 ^b	1.00 ± 0.04
Sperm concentration (10 ⁶ cells/ml)	74.50 ± 3.01	56.28 ± 6.36 ^a	69.22 ± 7.85 ^b	58.67 ± 1.53
Sperm head abnormality (%)	2.50 ± 0.97	27.44 ± 2.07 ^a	10.56 ± 2.19 ^b	29.67 ± 2.95
Sperm reacted sperm (%)	6.25 ± 2.55	22.14 ± 2.54 ^a	15.00 ± 2.54 ^b	20.50 ± 2.08

Results and conclusion

PE diminished testicular histopathology in the CS rats. We also found that 50 mg/kgBW of PE significantly improved StAR protein expression and altered the intensity of some tyrosine phosphorylated proteins in the testis.



“In summary, PE leaf extract at 50 mg/kgBW can prevent testicular damage in rats with chronic stress.”