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Study of the effect of different phosphodiesterase (1, 3, 5) inhibitors on diclofenac-induced acute renal failure in rats

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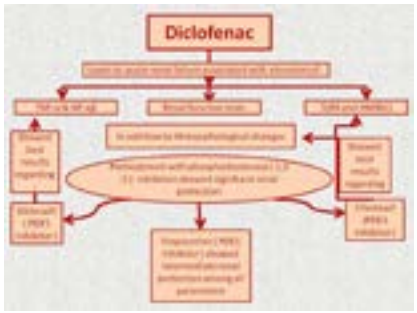
Diclofenac is one of the most commonly used NSAID that leads to severe adverse effects on the kidneys. The aim of the present study is to investigate the potential pretreatment effect of phosphodiesterase 1, 3 and 5 inhibitors on diclofenac-induced acute renal failure in rats. Rats were classified into five groups (n=8); control group (received 1 ml saline), model group (received diclofenac; 15 mg/kg, i.p), vinpocetine group (received vinpocetine; 20 mg/kg, P.O), cilostazol group (received cilostazol; 50 mg/kg, P.O) and sildenafil group (received sildenafil; 5 mg/kg, P.O). Rats were treated with vinpocetine, cilostazol or sildenafil daily for six days. Diclofenac was injected on days four, five and six in all groups, except control group. On the seventh day, animals were sacrificed. Vinpocetine, cilostazol and sildenafil significantly reduced diclofenac-induced elevation in the serum levels of urea, creatinine and cystatin C as well as renal tissue contents of TNF-α, NF-κB, TLR4 and HMGB1. This was reflected on the marked improvement in histopathological changes induced by diclofenac. This study revealed the good protective effect of these phosphodiesterase inhibitors against diclofenac-induced acute renal failure. Sildenafil showed the best protection regarding TNF-α and NF-κB, while cilostazol showed the best results regarding TLR4, HMGB1 and histopathological examination.



Biography

Nermeen Salah El Deen is focused on improving public health and wellbeing. She started her career as a Demonstrator in the Pharmacology and Toxicology Department, Faculty of Pharmacy at Cairo University. Her work is based on decreasing acute renal failure rates caused by diclofenac which is one of the most commonly used NSAIDS through pre-treatment with different phosphodiesterase inhibitors.

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