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Effect of minocycline on total oxidant-antioxidant levels and penicillin induced epileptiform activity in rats

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Involvement of minocycline in stages of infection, neuroprotection, and inflammation is well known. However, the effect of minocycline on various rat brain regions and plasma TAS (total antioxidant status), TOS (total oxidant status) values, and electrophysiology with penicillin-induced epileptiform activity have not been investigated. Here, we examined the electrophysiological effects of different minocycline doses in an experimental epilepsy model that started locally and became generalised. We compared the tissue and plasma TAS-TOS values of the antiepileptic dose of the drug with the control, sham, and drug free epileptic groups. Electrophysiological demonstrations revealed that minocycline has an anticonvulsant effect on penicillin induced epilepsy rats (P<0.05, 0.01 and 0.001) and its effective dose. With biochemical components of the study, it was found that minocycline had an antioxidant effect on serum and brain tissues of rats with penicillin induced epilepsy (P<0.05, 0.01).

Keywords: Anticonvulsant, Electrocorticograhy, Epilepsy, Oxidative stress, Reactive oxygen species (ROS), Seizure, Tetracycline