Central effect of crocin on penicillin-induced epileptiform activity in rats

Esmaeel Tamaddonfard, Nasrin Hamzeh Gooshchi, Sona Seiednejad-Yamchi

Division of Physiology, Department of Basic Sciences, Faculty of Veterinary Medicine, Urmia University, Urmia 57153-178, Iran

Correspondence: Esmaeel Tamaddonfard, e-mail: e_tamaddonfard@yahoo.com and e.tamaddonfard@urmia.ac.ir

Abstract:
In the present study, the effects of separate and combined intracerebroventricular (icv) injections of crocin and diazepam were investigated on penicillin-induced epileptiform activity. In urethane-anesthetized rats, epileptiform activity was induced by intracortical (ic) administration of penicillin (200 IU, 1 μl) and was analyzed using electrocorticographic (ECoG) recordings. The icv injections of crocin at doses of 25, 50 and 100 μg and diazepam at a dose of 10 μg increased the latency time to onset of first spike wave and decreased the frequency and amplitude of spike waves. Co-administration of an effective dose of crocin (50 μg) with an ineffective dose of diazepam (2.5 μg), increased the latency time to onset of first spike wave and decreased frequency and amplitude of spike waves as compared with crocin (50 μg). These results indicated that crocin and diazepam produced antiepileptic activities at the levels of the brain. Crocin potentiated the antiepileptic effect of diazepam. A GABA_A-benzodiazepine receptor-mediated mechanism may be involved in the antiepileptic activity of crocin.

Key words:
crocin, diazepam, penicillin-induced epileptiform activity, rats