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Antiabsence effects of safranal in acute experimental seizure models: EEG and autoradiography

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Abstract

PURPOSE. We examined the effect of safranal, a constituent of Crocus sativus, in acute experimental animal models of generalized absence seizures. METHODS. the effect of acute systemic administration of safranal on latency to seizure onset as well as spike and wave discharches (SWD) duration following pharmacologicallyinduced absence seizures was investigated in wildtype mice. We further characterized its effects on the GABAergic system through the regional modification of [^{٣}H] flunitrazepam, a benzodiazepine agonist binding site and [^{٣}H] CGP٥٤٦٢٦A, a $GABA_B$ receptor antagonist binding site in mouse brain. RESULTS. The systemic administration of safranal resulted in a significant and dose-dependent attenuation in experimental absence seizures elicited by either γ-butyrolactone (GBL), baclofen (BAC) or low doses of $GABA_A$ receptor antagonists; pentylenetetrazole (PTZ), picrotoxin (PTX) and bicuculline (BMC). After a single intraperitoneal administration of safranal (٢٩١ mg/kg), no changes in baseline electrocorticographic (ECoG) recording were observed, however, a significant decrease in [^{٣}H] flunitrazepam binding was seen in the cortex (٣٣,١٦٪, p<٠,٠٠١), hippocampus (٢٧,٣٦٪, p<٠,٠١) and thalamus (٢٩,٩١٪, p<٠,٠١) of mouse brain, while the [^{٣}H] CGP٥٤٦٢٦A binding did not show any modification in the same brain regions. CONCLUSION. These data indicate that there is an antiabsence seizure property in safranal and its effect may be due to modifications on the benzodiazepine binding sites of the $GABA_A$ receptor complex.

Reaxys Database Information

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Indexed Keywords

EMTREE drug terms: ٤ aminobutyric acid A receptor; cyclohexene derivative; safranal; terpene; unclassified drug

EMTREE medical terms: absence; animal; article; autoradiography; binding site; brain; C٥٧BL mouse; chemistry; Crocus; disease model; dose response; drug effect; electroencephalography; intraperitoneal drug administration; isolation and purification; male; metabolism; methodology; mouse; pathophysiology

MeSH: Animals; Autoradiography; Binding Sites; Brain; Crocus; Cyclohexenes; Disease Models, Animal; Dose-Response Relationship, Drug; Electroencephalography; Epilepsy, Absence; Injections, Intraperitoneal; Male; Mice; Mice, Inbred C٥٧BL; Receptors, GABA-A; Terpenes
Medline is the source for the MeSH terms of this document.

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