

Antioxidant and antidepressant effect of four novel bupropion analogues

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Abstract

In order to introduce new antioxidant and antidepressant compounds and to study the relation between the structure and the effect of bupropion, we investigated the antioxidant and antidepressant effects of its new analogues (A-D). The antidepressant effects were investigated using forced swimming test in mice. Taking the previous studies into consideration, doses of 2.5, 5, 10, 20, and 40 mg/kg of bupropion and its analogues were selected and injected intraperitoneally into male BALB/c mice at three different times of 23, 2, and 1 hours before the main swimming test. Only in the dose of 10 mg/kg, bupropion reduced significantly the duration of immobility ($p < 0.05$). Analogue A in all doses other than 2.5 mg/kg, analogue B in the doses of 10 and 20 mg/kg, analogue C in all doses (it had the most effect in the dose of 10 mg/kg) and analogue D only in the dose of 20 mg/kg showed significant effects on the duration of immobility. To differentiate between the antidepressant effects and locomotor activity effects, the open field test was used. In this test, only analogue C in the dose of 20 mg/kg significantly increased total locomotion ($p < 0.05$). Finally, the results showed that compound C in the dose of 10 mg/kg had the most effect in comparison with the other compounds and bupropion. Regarding the structure of the analogues, compound C contains the cyclic structure of piperidine which has probably produced a better effect. The tested compounds also showed good antioxidant activity in DPPH Radical-Scavenging Activity. Compound C showed the most antioxidant activity. Its IC_{50} was 63 ± 2.1 mg ml^{-1} .

Reaxys Database Information

Author keywords

Antidepressant; Antioxidant activity; Bupropion; DPPH; Forced Swimming Test; Open field test

Indexed Keywords

EMTREE drug terms: 1,1-diphenyl-2-picrylhydrazyl; amfebutamone; amfebutamone derivative; benzothiazoline derivative; unclassified drug

EMTREE medical terms: animal experiment; animal model; animal tissue; antidepressant activity; antioxidant activity; article; controlled study; depression; drug activity; drug structure; forced swimming test; IC_{50} ; immobilization; locomotion; male; mouse; nonhuman; open field test; structure activity relation

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