

# Abstract

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## Effect of intraperitoneal acetyl-L-carnitine (ALCAR) on anxiety-like behaviours in rats.

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**BACKGROUND:** Acetyl-L-carnitine (ALCAR) is an acetyl derivative of carnitine, an endogenous molecule synthesized in vivo and supplemented by diet (mainly via meat and dairy products). Several parallel, double-blind, placebo-controlled studies have demonstrated that ALCAR treatment produces beneficial effects in geriatric depression.

**METHODS:** Since most antidepressants also have anti-anxiety effects we examined whether ALCAR shows anti-anxiety effects in a rat model of anxiety.

**RESULTS:** Compared to a saline-injected control group, chronic administration of ALCAR at doses of 10 and 100 mg/kg (tested 24 h after the last dose administration) showed no effects, whereas doses of 50 and 75 mg/kg significantly reduced anxiety-like behaviours in the elevated plus-maze. Acute ALCAR (100 mg/kg), on the other hand (tested 6 h after administration), demonstrated anxiogenic effects.

**CONCLUSION:** Our data suggest that chronic ALCAR administration may produce an inverted U-shaped curve of dose-dependent changes in anxiety-like behaviour. The precise mechanism by which ALCAR decreases anxiety-like behaviour after peripheral administration remains to be determined.

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