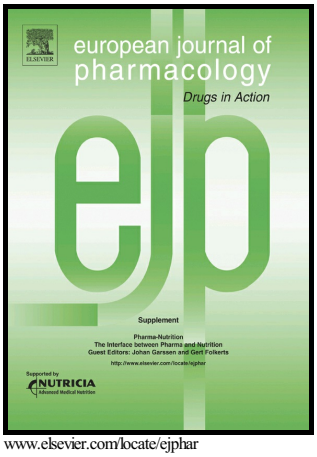

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Compound action potential inhibition produced by various antidepressants in the frog sciatic nerve

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ABSTRACT

Although an inhibition of action potential conduction in nerve fibers possibly contributes to at least a part of antinociception produced by analgesics and the adjuvants, it has not been fully examined yet how the conduction inhibition differs in extent among their drugs. We investigated the effects of various antidepressants used as analgesic adjuvants on compound action potentials (CAPs) recorded from the frog sciatic nerve by using the air-gap method. The results were compared with those of the other adjuvants that were reported previously. Antidepressants, duloxetine (serotonin and noradrenaline reuptake inhibitor, SNRI), fluoxetine (selective serotonin reuptake inhibitor, SSRI), amitriptyline (tricyclic tertiary amine), desipramine (tricyclic secondary amine) and maprotiline (tetracyclic secondary amine), reduced the peak amplitude of the CAP with half-maximal inhibitory concentration (IC_{50}) values of 0.23, 1.5, 0.26, 1.6 and 0.95 mM, respectively. Trazodone (non-SNRI, -SSRI, -tricyclic and -tetracyclic antidepressant) at 1.0 mM reduced CAP amplitude by about 50%. The duloxetine and amitriptyline values were comparable to those of lamotrigine and