




European Journal of Pharmacology

Volume 569, Issue 3, 27 August 2007, Pages 228-236

Anti-inflammatory effects of compounds alpha-humulene and (-)-trans-caryophyllene isolated from the essential oil of *Cordia verbenacea*

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Abstract

This study evaluated the **anti-inflammatory** properties of two **sesquiterpenes** isolated from *Cordia verbenacea*'s essential oil, **α-humulene** and (-)-trans-caryophyllene. Our results revealed that oral treatment with both compounds displayed marked inhibitory effects in

different inflammatory experimental models in mice and rats. α -humulene and (–)-*trans*-caryophyllene were effective in reducing platelet activating factor-, bradykinin- and ovalbumin-induced mouse paw oedema, while only α -humulene was able to diminish the oedema formation caused by histamine injection. Also, both compounds had important inhibitory effects on the mouse and rat carrageenan-induced paw oedema. Systemic treatment with α -humulene largely prevented both tumor necrosis factor- α (TNF α) and interleukin-1 β (IL-1 β) generation in carrageenan-injected rats, whereas (–)-*trans*-caryophyllene diminished only TNF α release. Furthermore, both compounds reduced the production of prostaglandin E₂ (PGE₂), as well as inducible nitric oxide synthase (iNOS) and cyclooxygenase (COX-2) expression, induced by the intraplantar injection of carrageenan in rats. The anti-inflammatory effects of α -humulene and (–)-*trans*-caryophyllene were comparable to those observed in dexamethasone-treated animals, used as positive control drug. All these findings indicate that α -humulene and (–)-*trans*-caryophyllene, derived from the essential oil of *C. verbenacea*, might represent important tools for the management and/or treatment of inflammatory diseases.

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Keywords

α -humulene; (–)-*trans*-caryophyllene; *C. verbenacea*'s
essential oil; Anti-inflammatory property; Oral
effect

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