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

Elizabeth S. Fernandes [a], Giselle F. Passos [a], Rodrigo Medeiros [a], Fernanda M. da Cunha [a], Juliano Ferreira [b], Maria M. Campos [c], Luiz F. Pianowski [d], João B. Calixto [a]

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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 ovoalbumin-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 (TNFα) and interleukin-1β (IL-1β) generation in carrageenan-injected rats, whereas (–)-*trans*-caryophyllene diminished only TNFα release. Furthermore, both compounds reduced the production of prostaglandin E_2 (PGE_2), 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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