Phytochemical and nociceptive evaluation of *Echinodorus macrophyllus* (Alismataceae) hexane extract.

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Introduction: The aim of this work was to evaluate the antinociceptive potential and perform phytochemical analysis of the hexane extract obtained from *Echinodorus macrophyllus* leaves (HEEm), a medicinal plant popularly known in Brazil as “chapéu de couro”, which is used to treat various diseases.

Experimental parts: Dry leaves (100 g) were trimmed and macerated with three successive changes of n-hexane 95% (2 L), which was finally evaporated on a rotary evaporator to obtain the HEEm. The chromatographic profiles were analyzed by GC-MS, using a DB 5 column and nitrogen as carrier gas. The antinociceptive activities were evaluated by the acetic acid abdominal constriction test and by the tail immersion test on SW male mice. All animal experiments were approved by the ethics committee of IBRAG-UERJ by protocol 05/2009.

Results: The HEEm showed profile with two major peaks with RT 11.90 and 26. 37 (min) and three lower intensity peaks with RT 14.15, 16.31 and 17.99 (min), analyzed by GC-MS. The HEEm (25 mg/kg) decreased in 52% (22.33±5.50) the number of constrictions in mice and the values were significantly different (P<0.05, Tukey.s test) when compared with the control group (46.79±5.41). The inhibition of 50% (23.07±8.28) was observed for the dipyrone group (50 mg/kg) (p<0.05, Tukey). The HEEm showed effectiveness in the treatment with 50 mg/kg at the time 60 and 90 minutes for the tail immersion test. Morfine (10 mg/kg), used as a standard drug showed antinociceptive activity during all time examined (30-180 min), after i.p. treatment when compared to the control group (n = 5/group).

Discussion/Conclusions: The analysis by GC-MS showed five main volatile compounds. The antinociceptive action of HEEm could be related to inhibition of the release of mediators in response to acetic acid such as bradykinin, substance P, prostaglandins and some cytokines such as IL-1β, TNF-α and IL-8. Also, some antioxidants have antinociceptive effects in both mechanical allodynia and thermal hyperalgesia.

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