5th BCNP Brazilian Conference on Natural Products
XXXI RESEM
Atibaia – SP – Brazil
ISBN: 978-85-66836-10-3
Oct. 26–29th 2015

ANTI-INFLAMMATORY ACTIVITY OF ETHANOL LEAF EXTRACT OF *Struthanthus vulgaris* ON CARRAGEENAN-INDUCED INFLAMMATION IN THE MOUSE AIR POUCH MODEL

Franciane Martins Marques[1]; Maycow Rodrigues da Costa[1]; Cátia Vittorazzi[1]; Luciane Souza dos Santos Gramma[1]; Tadeu Uggere de Andrade[1]; Marcio Fronza[1]

[1]Programa de Pós-Graduação em Ciências Farmacêuticas, Universidade Vila Velha, Vila Velha, Brasil (narf_1704@live.com)

The purpose of this study was to investigate the *in vivo* effects of ethanol leaf extract of *Struthanthus vulgaris* (EP) in the inflammatory air pouch model induced by carrageenan. To produce the air pouches, 3 mL of sterile air was subcutaneously injected into the back of the experimental animals [1,2]. Three days later 1.5 mL of sterile air was injected into the cavity. On the sixth day, the animals were divided in groups and inflammation was induced by carrageenan 1% administered directly into the air pouch. After one hour, animals were treated with phosphate buffered saline (PBS), EP 50 or 100 mg/kg or dexamethasone (1 mg/kg). After 4 and 24h, the animals were euthanized with an overdose on anesthesic and the pouches washed with 3 ml of PBS. The influx of total and differential leukocytes, the concentration of total proteins, detection of nitrite and the pro-inflammatory cytokines TNF-α and IL-1α, and the anti-inflammatory IL-10 were evaluated in the fluid collected from the mice air pouch cavity [3]. Treatment with 50 and 100 mg/kg of EP produced a significant decrease in the total number of cells, 53.9 ± 11.4% and 73.7 ± 10.5% after 4 and 30.5 ± 14.5% and 37.1 ± 17.2% after 24h, respectively ($p < 0.05$) when compared to PBS control group. Dexamethasone 1 mg/kg also suppress the total number of cells into the pouch (69.3 ± 14.8% and 84.3 ± 5.6% after 4 and 24h, respectively). The differential cell count revealed a highly prevalence of neutrophils with significant differences after 4 and 24h after treatment with EP followed by mononuclear cells and eosinophils. We also observed a significant reduction in total protein concentration after 24h at a dose 100 mg/kg and the levels of nitrate/nitrite after 4h of exposure to 50 mg/kg EP, as well as reduced cytokines TNF-α and IL-1α and an increased of IL-10 production. In conclusion, our results demonstrated that the ethanol leaf extract of *S. vulgaris* was effective in reducing the inflammation in the *in vivo* air pouch model by suppressing the influx of leucocytes, reducing the NO, TNF-α and IL-1α production.

Acknowldgments:

The authors are grateful to the Espírito Santo Research Support Foundation (FAPES), Brazilian National Council for Scientific and Technological Development (CNPq) and Universidade Vila Velha (UVV) for financial support.

References:

[1] Silva, R.R.; Silva, D.O.; Fontes, H.R.; Alviano, C.S.; Fernandes, P.D.; Alviano, D.S. 2013. Anti-inflammatory, antioxidant, and antimicrobial activities of *Cocos nucifera var*. typical. *BMC Complementary and Alternative Medicine*. 16;13:107.
[2] Edwards, J.C; Sedgwick, A.D; Willoughby, D.A. 1981. The formation of a structure with the features of synovial lining by subcutaneous injection of air: an *in vivo* tissue culture system. *Journal of Pathology.* 134: 147-56.
[3] Dalmarco, E.M.; Astolfi, G.; De Liz, R.; De Córdova, C.M.; Fröde, T.S. 2012. Modulatory effect of mycophenolate mofetil on carrageenan-induced inflammation in the mouse air pouch model. International Immunopharmacology. 13:476-82.