INVolVEMENT OF NITRIC OXIDE PATHWAY IN THE BIS(PHENYLIMIDAZOSELENAZOLYL) DISELENIDE EFFECT ON ALLODYNIA INDUCED BY COMPLETE FREUND’S ADJUVANT IN MICE

Fulco, B.C.W.; Chagas, P.M.; Roehrs, J.A.; Nogueira, C.W.

1DEPARTAMENTO DE BIOQUÍMICA E BIOLOGIA MOLECULAR, UNIVERSIDADE FEDERAL DE SANTA MARIA, RIO GRANDE DO SUL, BRAZIL;
2CENTRO DE CIÊNCIAS QUÍMICAS, FARMACÊUTICAS E DE ALIMENTOS, LABORATÓRIO DE SÍNTESE ORGÂNICA LIMPA, UNIVERSIDADE FEDERAL DE PELOTAS, RIO GRANDE DO SUL, BRAZIL.

Introduction and Objectives: The injection of complete Freund’s adjuvant (CFA) in hindpaw of rodents induces tissue inflammation and pain hypersensitivity. This peripheral inflammation results in transcriptional activation of pain mediators in dorsal horn neurons. It has been reported that organoselenium compounds have antinociceptive properties in animal models. The purpose of this study was to investigate the antiallodynic effect of bis(phenylimidazoselenazolyl) diselenide (BPIS) in the CFA model in mice and its mechanism of action. Material and Methods: Male C57BL6 mice received i.pl. CFA injection in the right hindpaw. The inflammatory response was verified 24h after CFA injection. The withdrawal response frequency in the von Frey test (filament of 0.6 g) was recorded after (0 to 8h) BPIS treatment (1 mg/kg, p.o.). After 8h, the mice were killed and the injected paw and spinal cord were collected to determine myeloperoxidase (MPO) activity, nitrate/nitrite (NOx) and 3-nitrotyrosine (3-NT) content. A separate experiment was performed, in which mice received L-arginine (600 mg/kg; i.p.; a nitric oxide precursor) or saline, 20min before BPIS treatment. The animals were used according to guidelines of Committee on Care and Use of Experimental Animal Resources, UFSM (#066/2014). Results and conclusions: BPIS reversed mechanical allodynia induced by CFA. Although the MPO activity, NOx and 3-NT were increased in paw of animals injected with CFA, it was not reversed by BPIS administration. However, in the spinal cord, BPIS reversed the increase in NOx content induced by CFA. The spinal MPO activity and 3-NT content were not altered by CFA or BPIS treatment. The antinociceptive effect of BPIS on CFA-induced allodynia was prevented by L-arginine pre-treatment. In conclusion, the obtained data demonstrated that BPIS antinociceptive effect seems to be related to the nitric oxide pathway in the spinal cord, observed by the decrease of NOx content and blockade by L-arginine.

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