A Chitin-Binding Protein Isolated from *Moringa oleifera* Seeds (*Mo*-CBP$_4$) Exerts Anti-Inflammatory and Analgesic Effects by Oral Administration in Mice

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Introduction. *Moringa oleifera* Lam. is a perennial multipurpose tree that has been successfully used in folk medicine to treat several inflammatory processes. In our research group, a 12 kDa chitin-binding protein from *M. oleifera* seeds, named *Mo*-CBP$_4$, was purified. **Objectives.** This study aimed to investigate the anti-inflammatory and antihypernociceptive effects of *Mo*-CBP$_4$ using animal model. **Material and Methods.** The anti-inflammatory effect of *Mo*-CBP$_4$ (10, 20 and 40 mg/kg, p.o.) was investigated using the model of zymosan-induced neutrophil migration in mice. To assess the antihypernociceptive effect of *Mo*-CBP$_4$, the protein was firstly administrated orally by gavage (20, 40 and 80 mg/kg), and then mechanical models of hypernociception induction were used: carrageenan (CG, 300 µg/paw), prostaglandin E2 (PGE2, 100 ng/paw) or epinephrine (EP, 100 ng/paw). Myeloperoxidase from paw was measured to evaluate neutrophil migration. **Results and Discussion.** *Mo*-CBP$_4$ significantly inhibited the neutrophil influx in peritoneal cavity induced by zymosan. This inhibitory effect was completely prevented when the protein was combined with *N*-acetyl-D-glucosamine, demonstrating the participation of carbohydrate-binding sites. Furthermore, *Mo*-CBP$_4$ reduced IL-1 and increased IL-10 levels in peritoneal fluid and serum, respectively. In addition, oral treatment with *Mo*-CBP$_4$ (40 mg/kg) inhibited the development of mechanical hypernociception induced by CG; however, no effect was observed on hypernociception induced by EP nor PGE2. The inhibition of inflammatory hypernociception by *Mo*-CBP$_4$ was associated with the prevention of neutrophil recruitment to the plantar tissue of mice. **Conclusions.** Our results provide information about the antinociceptive and anti-inflammatory properties of *Mo*-CBP$_4$ and suggest that this glycoprotein might be potentially interesting in the development of new clinically relevant drugs for the management of painful and/or inflammatory diseases.

Keywords: *Moringa oleifera*; chitin-binding protein; anti-inflammatory; antihypernociceptive.
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