

The inhibitory activity of cocoa phenolic extract against pro-inflammatory mediators secretion induced by lipopolysaccharide in RAW 264.7 cells

ABSTRACT

Cocoa is a rich source of polyphenols that has been traditionally used as the treatment of several types of inflammation related disease. The response to inflammation comprises the consecutive release of mediators and the enlistment of circulating leukocytes, such as macrophages. Currently, Cocoa-derived polyphenolics have shown anti-inflammatory effects *in vivo*, but the therapeutic benefits *in vitro* remain unclear. Therefore, in this study, the effect of cocoa polyphenolic extract (CPE) on RAW 264.7 macrophage cells sensitized by lipopolysaccharide as *in vitro* inflammatory model was investigated. The anti-inflammatory activity of CPE was assessed by measuring its ability to inhibit the pro-inflammatory enzyme 5-lipoxygenase (5-LOX) and the pro-inflammatory mediators prostaglandin E2 (PGE2), reactive oxygen species (ROS), nitric oxide (NO) and tumor necrosis factor-alpha (TNF- α). The results show that CPE significantly inhibits 5-LOX activity ($p < 0.01$). In addition, CPE dose-dependently suppressed the production of PGE2, ROS, NO and TNF- α in RAW 264.7 cells. These data suggest that CPE may be used for the treatment of inflammation and its related-diseases.

Keyword: Cocoa; Polyphenols treatment; Inflammation; 5-Lipoxygenase; Prostaglandin; RAW 264.7 macrophage cells