Inhibitory effects of pterogynidine alkaloid obtained from *Alchornea glandulosa* on inflammation and angiogenesis.

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*Alchornea glandulosa* is a plant traditionally used in infusions for the treatment of immune-inflammatory disorders. Inflammation and angiogenesis are closely linked processes with a complex interplay of signaling pathways. The aim of this research was the study of the anti-inflammatory and anti-angiogenic activities of the alkaloid pterogynidine (Pt) isolated from this plant. Nitric oxide (NO) and the cytokines TNF-α, IL-1β, IL-6 and IL-12 were determined using peritoneal macrophages activated with lipopolysaccharide. NO was determined through Griess reaction and the cytokines were evaluated using ELISA assays. To study angiogenesis, human umbilical vein endothelial cells (HUVEC) were incubated with Pt and proliferation (bromodeoxyuridine), apoptosis (TUNEL assay), invasion (double-chamber) and capillary-like structures formation (Matrigel) were addressed. Nuclear factor κB (NFκB), a transcription factor implicated in these processes, was also evaluated. Pt (25μg/mL) significantly inhibited the production of NO (78,18±6,04%) and the cytokines TNF-α (99,18±2,00%), IL-1β (81,12±1,77%), IL-6 (17,89±2,70%) and IL-12 (81,50±2,28%). A significant decrease in proliferation (11.79%±4.02%) and invasion capacity (4.09%±2.95%) and an effective increase in apoptosis (1771.43%±122.81%) have been found in cultured cells treated with Pt (1,56μg/mL). This alkaloid also led to a drastic reduction in the number of capillary-like structures into 0.2%±0.45% of control values. In addition, incubation of HUVEC with Pt resulted in a reduced NFκB activity (63.67%±9.51%). According to these results, it is suggested that Pt has anti-inflammatory activity. Furthermore, our findings emphasize the potential use of Pt against pathological situations where angiogenesis is stimulated such as inflammatory diseases and tumor development.