Angiotensin II stimulates the release of interleukin-6 and interleukin-8 from cultured human adipocytes by activation of NF-kappaB.

OBJECTIVE: Several proinflammatory cytokines including IL-6 and IL-8 are produced by human adipocytes, but it is still unclear how this process is regulated. Angiotensin (Ang) II, which is also produced by adipocytes, might play a role as a regulator. In the present study, we investigated the effect of Ang II on the production of IL-6 and IL-8 in in vitro differentiated human adipocytes.

METHODS AND RESULTS: Isolation of preadipocytes and differentiation of these cells into adipocytes, Real-time quantitative reverse-transcriptase polymerase chain reaction, Western-blot, enzyme-linked immunosorbent assay, and electromobility shift assay. Ang II-stimulated IL-6 and IL-8 mRNA expression and protein release in a time- and concentration-dependent way. This action of Ang II was completely blocked by the NF-kappaB-blocker Bay 117082 and the AT1 blocker candesartan, but only partially by the AT2-blocker PD 123319. Incubation of adipocytes with Ang II resulted in an increased phosphorylation of the p65 subunit of NF-kappaB and an increased translocation of NF-kappaB to the nucleus.

CONCLUSIONS: Ang II stimulates IL-6 and IL-8 production and release from human adipocytes by a NF-kappaB-dependent pathway. This proinflammatory action of Ang II seems to be mediated by the AT1 and less by the AT2 receptor subtype.