Constitutive and regulated expression and secretion of interferon-gamma-inducible protein 10 (IP-10/CXCL10) in human adipocytes.

OBJECTIVE: Chemokine secretion by adipocytes has been postulated to initiate leukocyte infiltration in adipose tissue and might mediate an important step in the establishment of obesity-related chronic immune activation. The chemokine interferon (IFN)gamma-inducible protein-10 (IP-10/CXCL10) is a chemoattractant for various leukocyte subsets and has been implicated in the pathogenesis of atherosclerosis. This study investigates whether IP-10 is expressed in human adipocytes and whether its release is regulated by body mass index (BMI) or immunological stimuli. METHODS: In cultures of human mature adipocytes and in vitro differentiated adipocytes, IP-10 expression under basal conditions and in the presence of IFN gamma, lipopolysaccharide (LPS) or interleukin (IL)-4 was characterized by reverse transcriptase-polymerase chain reaction, Luminex technology and immunofluorescence. RESULTS: IP-10 was expressed and secreted constitutively in most cultures of mature adipocytes from omental and subcutaneous (s.c.) depots. The association between IP-10 release and donor BMI was not significant. In in vitro differentiated adipocytes from s.c. and mammary depots and in mature s.c. adipocytes, IP-10 secretion was strongly upregulated by IFN gamma, whereas LPS or IL-4 did not affect IP-10 expression in s.c. mature adipocytes. Immunofluorescence confirmed IP-10...
expression in adipocytes with abundant lipid droplets. CONCLUSION: Mature human adipocytes express and secrete the chemokine IP-10 and are thus identified as a novel cellular source of this disease-related immune mediator. IP-10 expression could be significantly induced by IFNγamma, but not by LPS, which points to both similar reactivities and functional differences between adipocytes and innate immune cells.