Abstract:

OBJECTIVE: Interleukin (IL)-18, an important mediator of innate immunity and strong risk factor for the development of cardiovascular disease, was shown recently to be elevated in obesity. The aim of our study was to investigate whether human adipocytes produce IL-18.

METHODS: Human adipose tissue was obtained from lean women undergoing elective plastic surgery and from obese individuals undergoing laparoscopic surgery (gastric banding). Preadipocytes from mammary adipose tissue were isolated and differentiated under defined adipogenic conditions. IL-18 expression was analyzed by real-time reverse transcriptase PCR, ELISA and immunocytochemistry.

RESULTS: Human preadipocytes of all differentiation stages spontaneously secreted IL-18. In parallel significant amounts of IL-18 mRNA were detected. Freshly isolated mature adipocytes from subcutaneous and omental depots also released IL-18. IL-18 release from adipocytes from obese donors was about 3-fold higher compared to adipocytes from non-obese donors.

CONCLUSIONS: We conclude that human adipose tissue produces IL-18 and thereby contributes to systemic IL-18 concentrations. This finding supports the concepts that adipocytes behave as primitive immune cells and that IL-18 may mediate some of the detrimental complications of obesity such as cardiovascular disease and type 2 diabetes.