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## Adipose Tissue as an Endocrine Organ

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### Abstract

Adipose tissue is a complex, essential, and highly active metabolic and endocrine organ. Besides adipocytes, adipose tissue contains connective tissue matrix, nerve tissue, stromovascular cells, and immune cells. Together these components function as an integrated unit. Adipose tissue not only responds to afferent signals from traditional hormone systems and the central nervous system but also expresses and secretes factors with important endocrine functions. These factors include leptin, other cytokines, adiponectin, complement components, plasminogen activator inhibitor-1, proteins of the renin-angiotensin system, and resistin. Adipose tissue is also a major site for metabolism of sex steroids and glucocorticoids. The important endocrine function of adipose tissue is emphasized by the adverse metabolic consequences of both adipose tissue excess and deficiency. A better understanding of the endocrine function of adipose tissue will likely lead to more rational therapy for these increasingly prevalent disorders. This review presents an overview of the endocrine functions of adipose tissue.

THE TRADITIONAL VIEW of adipose tissue as a passive reservoir for energy storage is no longer valid. As early as 1987, adipose tissue was identified as a major site for metabolism of sex steroids (1) and production of adiponectin, an endocrine factor that is markedly down-regulated in rodent obesity (2). The subsequent identification and characterization of leptin in 1994 firmly established adipose tissue as an endocrine organ (3). Adipose tissue is now