

Adipokines

Adipokines is a term that is used to collectively describe a variety of signaling molecules that are released/secreted from the adipose tissue. Examples of adipokines include adiponectin and cytokines, such as tumor necrosis factor α (TNF- α).

Irisin

Irisin is a myokine (protein secreted from the skeletal muscle) encoded by the gene *FNDC5*. Its secretion from skeletal muscle is stimulated by exercise, where it acts in mice to promote browning of white adipose tissue, increased energy expenditure, weight loss, and the lowering of blood glucose levels. However, the relevance of these findings in humans has been questioned.

Myogenic factor

Myogenic factors are protein transcription factors that regulate myogenesis, which is the formation of muscular tissue. Myogenic factors include the proteins myogenin, herculin, myogenic factor 5, and MyoD.

Peroxisome proliferator-activated receptor γ coactivator 1 α (PGC1 α)

PGC1 α is a transcriptional coactivator that plays a key role in the regulation of cellular energy metabolism. Activation of PGC1 α increases mitochondrial biogenesis. In muscle, PGC1 α activation results in a muscle that is more oxidative and less glycolytic.

Proprotein convertase subtilisin/kexin type 9 (PCSK9)

PCSK9 is a protein that binds to the low-density lipoprotein (LDL) cholesterol receptor in the liver. PCSK9 binding to the LDL receptor results in breakdown of the LDL receptor, thereby increasing blood cholesterol levels. Thus, inhibition of PCSK9 to increase liver LDL-receptor expression and subsequent lowering of blood cholesterol levels has been pursued for the

treatment of high cholesterol. Some approved agents include alirocumab and evolocumab.

Steatosis

Steatosis is the accumulation of lipids (usually neutral lipids, such as triacylglycerol [TAG] and cholesterol) in a cell in higher than normal amounts. For example, increased TAG levels in the heart is referred to as cardiac steatosis and in the liver is referred to as hepatic steatosis.

Thermogenesis

Thermogenesis is the process by which an organism produces heat. This occurs either via shivering thermogenesis, where heat is produced from the conversion of the chemical energy of adenosine triphosphate (ATP) into kinetic energy, and some of this produced energy is lost as heat, or via nonshivering thermogenesis, which occurs primarily in brown adipose tissue and involves the actions of uncoupling protein 1 (UCP1). UCP1 is present in the inner mitochondrial membrane of cells and dissipates the proton gradient across this membrane. As a result of this action, mitochondrial respiration produces heat instead of ATP.

Uncoupling protein

Uncoupling proteins (UCPs) are proteins that are present in the inner mitochondrial membrane of cells; UCPs dissipate the proton gradient across this membrane. As a result of this action, mitochondrial respiration produces heat instead of adenosine triphosphate (ATP). Heart and skeletal muscle contain two isoforms of UCPs—UCP2 and UCP3. The exact function of these UCPs is not clear, but they may be involved in decreasing reactive oxygen species production by the mitochondria or transporting excess fatty acids out of the mitochondria. The expression of UCPs in the mitochondria is increased in muscle exposed to high fats.