

The role of SOCS-3 in leptin resistance and obesity

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Abstract

Obesity is one of risk factors of various chronic diseases and malignancy. It may result from excess accumulation of body fat. This condition may be caused by dysfunction of appetite-regulating pathways and energy balance due to leptin resistance. Leptin, a 16 kDa hormone, is the most important regulator of appetite and energy balance in the body. Most individuals with obesity have leptin resistance characterized by increased leptin blood level.

One of the mechanisms considered to have a role in leptin resistance is disruption in signal transduction process through Janus-activating kinase2-signal transducer and activator of transcription 3 (JAK2-STAT3) pathway on leptin receptors by suppressor of cytokine signaling-3 (SOCS-3).

SOCS-3 is a protein that inhibits the signal transduction process of various cytokines in the body, including leptin. SOCS-3 expression is induced by leptin and SOCS-3 activation will inhibit STAT3 phosphorylation, which is important in signal transmission on leptin receptors. Such inhibition will consequently cause leptin resistance characterized by dysfunction of leptin biological function.

Biography

Adisaputra Ramadhinara, MD was graduated from the Faculty of Medicine, University of Indonesia, with a cum laude appreciation. He is mainly interested in the mechanism behind leptin resistance, and is currently working on ideas that seem to be the right answer to normalize leptin function at the receptor site.