Resistin

Resistin also known as adipose tissue-specific secretory factor (ADSF) or C/EBP-epsilon-regulated myeloid-specific secreted cysteine-rich protein (XCP1) is a cysteine-rich adipose-derived peptide hormone that in humans is encoded by the RETN gene.

In primates, pigs, and dogs, resistin is secreted by immune and epithelial cells, while, in rodents, it is secreted by adipose tissue. The length of the resistin pre-peptide in human is 108 amino acid residues and in the mouse and rat it is 114 aa; the molecular weight is ~12.5 kDa. Resistin is an adipose-derived hormone (similar to a cytokine) whose physiologic role has been the subject of much controversy regarding its involvement with obesity and type II diabetes mellitus (T2DM).

Resistin has been shown to cause “high levels of 'bad' cholesterol (low-density lipoprotein or LDL), increasing the risk of heart disease […] resistin increases the production of LDL in human liver cells and also degrades LDL receptors in the liver. As a result, the liver is less able to clear 'bad' cholesterol from the body. Resistin accelerates the accumulation of LDL in arteries, increasing the risk of heart disease. […] resistin adversely impacts the effects of statins, the main cholesterol-reducing drug used in the treatment and prevention of cardiovascular disease.”

Resistin, is increased with obesity and has been shown to play pro-inflammatory and catabolic role in cartilage metabolism. However, the effect of resistin on the catabolic enzymes within NP cells remains unknown.

Liu et al., exposed nucleus pulposus (NP) cells to resistin, and the transcriptional activity, gene expression, and protein levels of ADAMTS-5 were measured by luciferase reporter assay, qRT-polymerase chain reaction, immunofluorescence, and western blot, respectively. The activation of p38 MAPK pathways was detected using western blot analysis.

Resistin had no effect on cell viability. Resistin increased ADAMTS-5 expression in rat NP cells time and dose dependently. The p38 MAPK signaling pathway was activated after exposure to resistin. Treatment with p38 inhibitor decreased the upregulation of ADAMTS-5 by resistin.

The current study, for the first time, investigated the role of resistin in ADAMTS-5 regulation in IDD. These findings provide novel evidence supporting the causative role of obesity in IDD, which is important to develop novel preventative or therapeutic treatment in disc degenerative disorders [1].

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Liu C, Yang H, Gao F, Li X, An Y, Wang J, Jin A. Resistin Promotes Intervertebral Disc Degeneration by Upregulation of ADAMTS-5 Through p38 MAPK Signaling Pathway. Spine (Phila Pa 1976). 2016 Sep 15;41(18):1414-20. doi: 10.1097/BRS.0000000000001556. PubMed PMID: 26974833.