## IR/diabetes/CV dysfunction: An overview

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## **Dysfunctional adipose tissue.**

Early central obesity is associated with a low-grade chronic inflammatory state characterized by slow infiltration of macrophages which are an important source of inflammation of this adipose tissue <u>World J</u> <u>Diabetes.</u> 2016 Nov 15;7(19):483-514. Nutrition, insulin resistance and dysfunctional adipose tissue determine the different components of metabolic syndrome. <u>Paniagua JA</u>



Antiatherosclerotic action Proatherosclerotic action

Dysbalanced situation with metabolic and vascular inflexibility

## Selective vascular insulin resistance: Endothelial cell

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Differences in energy metabolism in the aerobic and insulin-resistant heart.

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Non-coding RNAs associated with both type2DM and cardiovascular disease (CVD). MicroRNAs (miRNAs) and long non-coding RNAs (lncRNAs) are grouped according to their main biological mechanism involved in atherosclerotic CVD. Arrows indicate overexpression ( $\uparrow$ ) or underexpression ( $\downarrow$ ). Front. Endocrinol., 2018 Jan 17;9:2. doi: 10.3389/fendo.2018.00002. eCollection 2018. De Rosa S.



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The distinct role for insulin resistance and insulin actions in the kidney Cardiorenal Med. 2017 Dec;8(1):41-49. doi: 10.1159/000479801. Epub 2017 Sep 30. Insulin Resistance in Kidney Disease: Is There a Distinct Role Separate from That of Diabetes or Obesity? Whaley-Connell A, Sowers JR