

## **Obesity, Lipotoxicity and the Metabolic Syndrome**

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The prevalence of obesity is increasing and despite increasing knowledge about the mechanisms controlling energy balance, current therapeutic strategies have proved to be not efficient to prevent or reverse its progression. A more pragmatic approach is to try to prevent the metabolic complications associated with obesity. We have an adipocentric vision of the metabolic syndrome and consider that the link between obesity and insulin resistance is the mismatch between energy surplus and storage capacity in adipose tissue. The key concept is lipotoxicity defined as the toxic effects resulting from ectopic accumulation of fat outside adipose tissue in metabolically relevant organs such as muscle, liver, beta cells or the brain. We will present data supporting three main concepts: a) defects in adipose tissue expandability as a key feature leading to lipotoxicity, b) the quality of fat is as important as the amount of fat to cause toxicity and c) role of lipidomics as a tool to study lipotoxicity.