Title
LIPID SIGNALS AS FAT SENSORS: THE ROLE OF OLEOYLETHANOLAMIDE IN ENERGY BALANCE

Permalink
https://escholarship.org/uc/item/14k9707m

Journal
BEHAVIOURAL PHARMACOLOGY, 23(5-6)

ISSN
0955-8810

Author
Piomelli, D

Publication Date
2012-09-01

Supplemental Material
https://escholarship.org/uc/item/14k9707m#supplemental

License
CC BY 4.0

Peer reviewed
Patches of fat, known as adipocytes, are contained in subcutaneous depots (adipose organ) in all mammals (Frontini and Cinti, 2010). A growing body of evidence suggests that the reason for this mixture could reside in the fact that adipocytes can convert directly each other under appropriate stimuli. Under chronic cold exposure white convert into brown to support the need for thermogenesis and under obesogenic diet brown convert into white to satisfy the need of energy storing. Adipocytes in the mammary gland offers another example of plasticity: during pregnancy and lactation adipocytes transdifferentiate into milk-producing epithelial glands and vice versa in the post-lactation period. The white into brown transdifferentiation is of great medical interest because the brown phenotype of the adipose organ is associated with obesity resistance and drugs inducing the brown phenotype cure obesity and related disorders.

Macrophages infiltrating the adipose organ are responsible for the inflammation dealing to insulin resistance and T2 diabetes. This inflammation is caused by the need of removal debris deriving from the death of adipocytes. Death of adipocytes is tightly related to their hypertrophy up to the critical death size. Visceral adipocytes have a critical death size smaller than subcutaneous adipocytes, thus explaining the higher inflammation and higher morbidity of visceral fat.