e-ISSN: 2322-0066

Adipose Tissue: An Endocrine Organ

Mehmet VAROL*

Department of Biology, Yunusemre Campus, Anadolu University, Eskisehir TR26470,Turkey

Editorial

Received date: 02/04/2021

Accepted date: 16/04/2021

Published date: 23/04/2021

***For Correspondence**

Mehmet VAROL, Department of Molecular Biology and Genetics, Faculty of Science, Kotekli Campus, Mugla Sitki Kocman University, Mugla TR48000, Turkey
Tel: 0090-252-211-31-32 / 4839; Fax: +90-252-211-92-80

E-mail: mehmetvarol789@mu.edu.tr

EDITORIAL NOTE

Adipose tissue may be a specialized animal tissue consisting of lipid-rich cells called adipocytes. Because it comprises about 20-25% of total weight in healthy individuals, the most function of fat is to store energy within the sort of lipids (fat). Supported its location, fat tissue is split into parietal (under the skin) and visceral (surrounding organs). Counting on adipocyte morphology, there are two sorts of adipose. White fat - mainly found in adults

- Brown fat - mainly found in newborns

Besides energy storing, fat tissue has several other important functions within the physical body. These comprise thermal isolation, cushioning the organs, an endocrine role, and production of various bioactive factors.

Adipose tissue is distributed within two compartments of the human body:

- Parietal or subcutaneous fat, which is embedded within the animal tissue under the skin
- Visceral fat, which surrounds the interior organs, like eyeballs (periorbital fat) or kidneys (perirenal fat capsule).

Like every additional tissue, fat consists of cells and extracellular matrix. The cells are the foremost abundant structural elements of this tissue, predominating over the tiny amount of extracellular matrix. The most cells that compose fat are called adipocytes. Besides adipocytes, several other cell types are present; preadipocytes, fibroblasts, capillary endothelial cells, macrophages and stem cells. These non-adipocyte cells collectively form the stromal vascular fraction, and their main function is to support and protect the fat. The extracellular matrix is produced by both adipocytes and stromal cells. It contains of a fine network of reticular fibers (type III collagen), whose function is to carry the cells in situ. Fat is richly furnished with blood vessels and unmyelinated nerve fibers. On histology slides, these structures are regularly found within the meshwork that separates neighboring adipocytes. Mast cells also are present here.

Adipocytes (adipose cells, fat cells), are the building blocks of fat. There are three sorts of adipocytes that constitute two differing types of adipose tissue;

- White adipocytes - main cells of the white fat
- Brown adipocytes - chief cells of the brown fat
- Beige adipocytes - recently discovered type, found dispersed within white fat tissue

These cell types differ in their morphology and performance.

White adipocytes are mainly present in white fat. Their shapes range from spherical (when isolated) to oval or polyhedral (as a part of adipose tissue). The most important a part of the cell is crammed with one (unilocular) lipid droplet that thrusts and flattens the nucleus to the periphery of the cell. The cytoplasm forms a skinny sheath round the droplet and contains a couple of mitochondria inside. The lipid droplets usually stray during routine preparation of histological slides, which makes white fat seem as a fragile net of polygonal structures. These cells store fat. contrast to white adipocytes, brown adipocytes are smaller in size and have the lipids contained in multiple lipid droplets (multilocular morphology). The droplets surround the centrally positioned nucleus. Brown adipocytes have many mitochondria dispersed between the droplets which give these cells their brown appearance. The cytoplasm also contains Golgi body, and only alittle amount of ribosomes and endoplasmic reticulum. These cells produce heat (thermogenic adipocytes). Similar as in white adipocytes, the lipid droplets stray in brown adipocytes also during routine histological preparation. They're seen as a network of cells crammed with numerous empty vacuoles. Beige adipocytes are a definite sort of brown-like thermogenic adipocytes with multilocular morphology. They exist mainly in subcutaneous fat, but a little portion also can be found in visceral fat.

Every adipocyte is surrounded by a thick basal lamina containing collagen IV as a serious component, almost like the cells of bone and cartilage. The strong external membrane of adipocytes is of key importance for resilience to mechanical stress and disruption.