BIOTECHNOLOGY

METHOD FOR THE PRODUCTION OF HUMAN BROWN/BEIGE ADIPOCYTES

Partnership and/or Licensing Opportunities

Donnons au sang le pouvoir de soigner

Over one billion adults are either overweight or obese and more than 150 million adults have diabetes.

Adipose tissues play an important role in obesity, insulin resistance and diabetes. White Adipose Tissue (WAT) is the primary site of depot of triglycerides and release of fatty acids. Brown Adipose Tissue (BAT) is specialized in thermogenic energy expenditure through the expression of uncoupling protein-1 (UCP-1).

Recently, a third type of fully differentiated adipocyte defined as brite or beige was shown to be inversely correlated with obesity. This suggests that increasing the relative proportion of brown/beige adipocytes may increase whole body energy expenditure preventing or curing obesity associated diseases.

EFS research laboratory has developed a novel method for producing adipogenic progenitors from human white adipose tissue or mesenchymal stem cells and further differentiating them into functional brown/beige adipocytes in 3D spheroids, which can be used for therapeutic or screening applications.

INVENTION

A new process for producing brown/beige adipocytes from adult human subcutaneous WAT or mesenchymal stem cells.

KEYWORDS

Obesity treatment, metabolic disorders, diabetes type 2 treatment, white adipose tissue (WAT), brown adipose tissue (BAT), beige adipocytes, 3D spheroids, cell-based therapy, mesenchymal stem cells, screening method.

DESCRIPTION

This process of brown/beige adipocytes production is obtained after 15 days of culture consisting in an expansion step (6-7 days) of adipocyte progenitors and a differentiation step (6-7 days) for obtaining brown/beige adipocytes.

APPLICATIONS

- **Cell therapy:** administration of brown/beige adipocytes to decrease fat stores or weight
- **Screening of compounds**: stimulate or inhibit the shifting of white adipocytes into brown/beige adipocytes

ADVANTAGES

- Simple, fast and reproducible process
- Low cost
- Human cells without genetic modification

REFERENCE

Muller et al. 2019 Nature Scientific Reports

CONTACTS

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INTELLECTUAL PROPERTY

Patent:
WO/2017/009263