1. Obesity: a world wide problem

BAT is able to produce heat without shaking thanks to the high levels of UCP-1 in its mitochondria. UCP-1 uncouple the electron transport chain producing heat instead of ATP.

2. Types of adipose tissue in mammals

<table>
<thead>
<tr>
<th>White (WAT)</th>
<th>Brown (BAT)</th>
<th>Brite or beige</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>One lipid droplet</td>
<td>Multiple lipid droplet</td>
</tr>
<tr>
<td></td>
<td>Many mitochondria</td>
<td>Expresses UCP-1</td>
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<td></td>
<td>↑ vascularized and innervated by the SNS</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Energy storage</td>
<td>Combusts energy</td>
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<tr>
<td></td>
<td>Thermogenesis</td>
<td>Thermogenesis</td>
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<tr>
<td>Origin</td>
<td>Myf5-negative mesenchymal cell</td>
<td>Myf5-positive mesenchymal cell</td>
</tr>
<tr>
<td></td>
<td>Myf5-negative mesenchymal cell</td>
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</tbody>
</table>

3. Mechanism of UCP-1

Thermogenesis is activated by the sympathetic nervous system, which in turn is activated by cold and diet. Norepinephrine produces a chain reaction.

4. Regulation of the tissue's activity

Thermogenesis is activated by the sympathetic nervous system, which in turn is activated by cold and diet. Norepinephrine produces a chain reaction.

5. Is the adaptive thermogenesis a potential tool to fight against obesity?

Approach “in vivo”
- Proliferation and differentiation of progenitor cells or beige adipocytes to BAT
- Increase of the mitochondrial mass
- Increase UCP-1 expression in BAT

Approach “ex vivo”

6. Conclusions

Alternative ways to treat obesity are needed. BAT has taken many importance since it was discovered that exist this type of adipose tissue in adult humans.

There is still a long way to go but a promising world of new therapies is ahead of us.

If we want a healthy society, we all have something to do.

References