Isolation and cultivation of adipose tissue-derived mesenchymal stromal cells

Commonly used acronym: AT-MSC


Contact person

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Organisation

Name of the organisation Vrije Universiteit Brussel (VUB)
Department Pharmaceutical and Pharmacological Sciences
Specific Research Group or Service In Vitro Toxicology and Dermato-Cosmetology
Country Belgium
Geographical Area Brussels Region

SCOPE OF THE METHOD

<table>
<thead>
<tr>
<th>The Method relates to</th>
<th>Animal health</th>
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<tbody>
<tr>
<td>The Method is situated in</td>
<td>Basic Research</td>
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<tr>
<td>Type of method</td>
<td>In vitro - Ex vivo</td>
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<tr>
<td>Specify the type of cells/tissues/organisms</td>
<td>adipose tissue-derived mesenchymal stromal cells</td>
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</tbody>
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DESCRIPTION

Method keywords

- adipose tissue
- Stem cells
- mesenchymal stromal cells
isolation
cultivation

**Scientific area keywords**

stem cell culture
stem cell isolation
mesenchymal stromal cells

**Method description**

Approximately 125 g of processed adipose tissue is incubated for 90 minutes at 37°C in dissociation medium (1:1) consisting of 1% (v/v) bovine serum albumin and 1 mg/mL collagenase A in phosphate buffered saline (PBS). After two filtration steps, the filtrate is carefully brought on top of 15 mL of Histopaque®-1077. Upon centrifugation for 20 minutes at 1000 g (4°C), the top layer is removed and the AT-MSC are collected in 50 mL PBS/BSA (1%). This procedure is carried out separately on two pieces of adipose tissue. Typically 5 - 20 x 10E7 viable cells are obtained per 250 g of processed adipose tissue. The isolated AT-MSC are then (sub)cultured as a monolayer in AT-MSC growth medium for 2 weeks, consisting of Dulbecco’s Modified Eagle Medium supplemented with 10% (v/v) foetal bovine serum (FBS), 50 µg/mL streptomycin sulphate, 7.33 IU/mL benzyl penicillin and 2.5 µg/mL fungizone. Cell cultures are incubated at 37°C in a 5% (v/v) CO2 humidified atmosphere and passaged at subconfluency using TrypLE® express. Growth media is changed every 3 days.

**Lab equipment**

Biosafety cabinet level 2;
Cell incubator;
Centrifuge.

**Method status**

History of use
Internally validated
Published in peer reviewed journal
PROS, CONS & FUTURE POTENTIAL

Advantages

Robust isolation method for adipose tissue-derived mesenchymal stromal cells.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References
