Isolation and cultivation of bone marrow-derived mesenchymal stromal cells

Commonly used acronym: *BM-MSC*

Created on: 20-03-2019 - Last modified on: 28-02-2022

Contact person

Joery De Kock

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

The Method relates to	Human health
The Method is situated in	Basic Research
Type of method	In vitro - Ex vivo
Specify the type of cells/tissues/organs	bone marrow-derived mesenchymal stromal cells

DESCRIPTION

Method keywords

Stem cells
stem cell culture
bone marrow
stem cell isolation
mesenchymal stromal cells

Scientific area keywords

mesenchymal stromal cells
stem cell culture
stem cell isolation

Method description

Mononuclear cells (MNC) are isolated from bone marrow aspirates by density gradient centrifugation and washed in Hank's buffered salt solution. MNC are seeded at a cell density of 2 × 10E4 cells/cm^2 in low glucose DMEM supplemented with 15% (v/v) heat-inactivated FBS, 2 mM L-glutamine and 0.5% (v/v) antibiotic/antimycotic solution. Cells

are incubated at 37°C in a 5% (v/v) CO2-enriched humidified atmosphere, cultured up to 90% confluency, trypsinized, centrifuged, and subcultured at a lower density (5 × 10E3 cells/cm^2) for all subsequent passages for 2 weeks.

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 protocol for isolation of bone marrow-derived mesenchymal stromal cells.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References

De Kock J, Najar M, Bolleyn J, Al Battah F, Rodrigues RM, Buyl K, Raicevic G, Govaere O, Branson S, Meganathan K, Gaspar JA, Roskams T, Sachinidis A, Lagneaux L, Vanhaecke T, Rogiers V. (2012) Mesoderm-derived stem cells: the link between the transcriptome and their differentiation potential. Stem Cells Dev. 21(18):3309-23

Coordinated by

Financed by