CLAIMS

1. Method for promoting anti-inflammatory properties and for improving the repair ability of a tissue containing mesenchymal stem cells (MSCs) characterized in that it comprises at least one step of mechanical activation performed by applying a orbital shaking force on a adipose tissue lipoaspirated or removed from the body.

2. Method according to claim 1 characterized in that the applied force has an intensity ranging from 40 to 120 x g.

3. Method according to claim 1 or 2 characterized in that the applied force has an intensity equal to 97 x g.

4. Method according to one or more of the preceding claims, characterized in that said force is applied for a time ranging from 3 to 20 minutes.

5. Method according to one or more of the preceding claims, characterized in that said force is applied for 10 minutes.

6. Method according to one or more of the preceding claims, characterized in that said mechanical activation step applying an orbital shaking force is repeated two or more times with an equal or different force intensity for each step and/or with an equal or different force application duration for each step.

7. Method according to one or more of the preceding claims, characterized in that said lipoaspirated adipose tissue is cryopreserved.

8. Method according to one or more of the preceding claims, characterized in that it provides a step isolating and expanding the mesenchymal stem cells contained in said adipose tissue lipoaspirated or removed from the body (ADSCs).

9. Method according to one or more of the preceding claims, characterized in that the step isolating and expanding the mesenchymal stem cells contained in said adipose tissue lipoaspirated or removed from the body (ADSCs) comprises:

- inoculation of 2 ml of mechanically activated adipose tissue in 25 cm^2 flask completely filled with culture medium "Dulbecco's modified Eagle's Medium" (DMEM) supplemented with 20% fetal bovine serum;

- incubation at 37°C in 5% C02;

~~- turning upside-down the flask such that cells float up and adhere to the top inner ceiling surface of the flask;~~

~~- removing the culture medium and tissue after 15 days and turning upside-down the flask so that the cells are on the bottom;~~

~~- replacing the culture medium every 4 days until reaching cell confluence of 90-95%.~~

~~11. Mesenchymal stem cells contained in adipose tissue lipoaspirated or removed from the body (ADSCs) characterized in that they are obtained by a method according to one or more of the preceding claims 1 to 9, which cells have improved anti-inflammatory properties and improved repair ability, since in said tissue:~~

~~- the expression of inflammatory cytokines is eliminated such as tumor necrosis factor-alpha (TNF-alpha);~~

~~- the expression of its natural inhibitor TSG-6 and of interleukin 15 is considerably enhanced;~~

~~- the expression of leptin is considerably improved;~~

~~and the parameters that define the sternness are increased such as the expression of pluripotency-related genes (SOX2, OCT4, Nanog), of beta-tubulin III and TSG6 mRNA.~~

~~12~~11. Adipose tissue lipoaspirated or removed from the body containing mesenchymal stem cells (MSCs) ~~obtained by a method according to one or more of the preceding claims 1 to 8~~, wherein the ~~which~~ tissue has improved anti-inflammatory properties and improved repair ability, since in said tissue:

- the expression of inflammatory cytokines is eliminated such as tumor necrosis factor-alpha (TNF-alpha);

- the expression of its natural inhibitor TSG-6 and of interleukin 15 is considerably enhanced;

- the expression of leptin is considerably improved;

and the parameters that define the sternness are increased such as the expression of pluripotency-related genes (SOX2, OCT4, Nanog), of beta-tubulin III and TSG6 mRNA, which tissue is for being used as a medicine.

~~13~~2. Tissue according to claim ~~12~~ 1 for being used in the treatment of motor and coordination dysfunctions.

~~14~~3. Tissue according to claim ~~12~~ 1 for being used in the treatment of Parkinson's disease.

~~15~~4. Tissue according to claim ~~12~~ 1 for being used in the treatment of spinal cord injuries.

~~16~~5. Mesenchymal stem cells contained in adipose tissue lipoaspirated or removed from the body ~~and obtained by a method according to one or more of the preceding claims 1 to 9~~, ~~which~~ wherein the cells have improved anti-inflammatory properties and improved repair ability, since in said cells:

- the expression of inflammatory cytokines is eliminated such as tumor necrosis factor-alpha (TNF-alpha);

- the expression of its natural inhibitor TSG-6 and of interleukin 15 is considerably enhanced;

- the expression of leptin is considerably improved;

and the parameters that define the sternness are increased such as the expression of pluripotency-related genes (SOX2, OCT4, Nanog), of beta-tubulin III and TSG6 mRNA, which cells are for being used as a medicine.

~~17~~6. Mesenchymal stem cells according to claim ~~16~~ 5 for being used in the treatment of motor and coordination dysfunctions.

~~18~~7. Mesenchymal stem cells according to claim ~~16~~ 5 for being used in the treatment of Parkinson's disease.

~~19~~8. Mesenchymal stem cells according to claim ~~16~~ 5 for being used in the treatment of spinal cord injuries.

9. Adipose tissue lipoaspirated or removed from the body containing mesenchymal stem cells (MSCs), wherein the tissue has improved anti-inflammatory properties and improved repair ability, since in said tissue:

- the expression of inflammatory cytokines is eliminated such as tumor necrosis factor-alpha (TNF-alpha);

- the expression of its natural inhibitor TSG-6 and of interleukin 15 is considerably enhanced;

- the expression of leptin is considerably improved;

and the parameters that define the sternness are increased such as the expression of pluripotency-related genes (SOX2, OCT4, Nanog), of beta-tubulin III and TSG6 mRNA.

10. Tissue according to any one of claims 1 to 4, and 9 whereby the tissue is obtained by a method comprising at least one step of mechanical activation performed by applying a orbital shaking force on a adipose tissue lipoaspirated or removed from the body, characterized in that the applied force has an intensity ranging from 40 to 120 x g and characterized in that said force is applied for a time ranging from 3 to 20 minutes.

11. Stem cells according to any one of claims 5 to 8 whereby the tissue is obtained by a method comprising at least one step of mechanical activation performed by applying a orbital shaking force on a adipose tissue lipoaspirated or removed from the body, characterized in that the applied force has an intensity ranging from 40 to 120 x g and characterized in that said force is applied for a time ranging from 3 to 20 minutes.

12. Tissue according to any one of claims 1 to 4 whereby the tissue is obtained by a method comprising:

- at least one step of mechanical activation performed by applying a orbital shaking force on a adipose tissue lipoaspirated or removed from the body, characterized in that the applied force has an intensity ranging from 40 to 120 x g and characterized in that said force is applied for a time ranging from 3 to 20 minutes,
- a step isolating and expanding the mesenchymal stem cells contained in said adipose tissue lipoaspirated or removed from the body (ADSCs) comprising the steps of:
- inoculation of 2 ml of mechanically activated adipose tissue in 25 cm^2 flask completely filled with culture medium "Dulbecco's modified Eagle's Medium" (DMEM) supplemented with 20% fetal bovine serum;
- incubation at 37°C in 5% C02;
- turning upside-down the flask such that cells float up and adhere to the top inner ceiling surface of the flask;
- removing the culture medium and tissue after 15 days and turning upside-down the flask so that the cells are on the bottom;
- replacing the culture medium every 4 days until reaching cell confluence of 90-95%.