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DERIVATION AND CHARACTERIZATION OF MESENCHYMAL STEM CELL LINE ISOLATED FROM HUMAN GINGIVA

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A new non-immortalized cell line MSC-GING from gingiva of 35 years old healthy donor was derived and characterized. Analysis of different characteristics was carried out on 6th, 7th, 13th, 18th, 20th and 23th passages. Accord-

ing to b-galactosidase activity, a fraction of senescent cells grow up during long-term cultivation. The plating efficiency decreases significantly in the process of long-term cultivation. The growth curves indicate to active proliferation at 6th passage and a significant decrease of the index of proliferation at 18tth and 20th passages. The karyotypic analysis at 7th and 18th passages showed the presence of diploid number of chromosomes, 46. Karyotypic analysis at 7th passage showed that 50.0 ± 5.0% of cells have normal karyotype, 46, XX and another part (50.0 ± 5.0%) have a clonal rearrangement - inversion of the long arm chromosome 10, inv(10)(q11.2 ~ 21q25). The proportion of these cells decreases significantly in the late passage. At 6th and 20th passages the presence of typical surface antigens for human MSCs: CD44, CD73, CD90, CD105, HLA-ABC) and the absence of CD34, CD45, HLA-DR were showed. It is significantly that there were no cells carrying positive human undifferentiated embryonic stem cell markers: OCT-4, SSEA-4 and SOX2 at 6th and 20th passages. It was shown that MSC-GING cells can differentiate to osteogenic and chondrogenic directions. The ability to differentiate in the adipogenic direction was manifested only at the level of *glut4* gene expression. Induction of neuronal differentiation led to an increase in the level of expression of the *nse* gene – neurospecific elonase. Overall, the presented results confirm the status of MSCS for the derived line, but indicate a significant karyotypic instability in the early passage, which decreases in the process of replicative senescence.

Keywords: human mesenchymal stem cells, proliferation, replicative senescence, surface cell markers, karyotype, differentiation