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Immature dental stem cells: Bio technological product ready to go throughout stem cell- based therapy market

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Immature stem cells from dental pulp (IDPSC) are originated from neural crest and express embryonic, mesenchymal and epithelial stem cell markers *in vitro*. They appear to be less problematic being not ethically controversial and painful source, widely multipotent, not tumorigenic, which maintain their “stemness” for several serial passages. Because of short population doubling time, these cells can be up-scaled in large numbers. Due to these characteristics, they considered the most promising tool for regenerative medicine and tissue engineering. Aiming at establishing cell bank of IDPSC, here we compare IDPSC isolated at the very beginning (early) of dental pulp tissue culturing and after three months (late). The phenotype and proliferative potential and differentiation capacity were evaluated, when IDPSC were cultured in different media. Our data demonstrate that IDPSC can be easily isolated and successfully expanded *in vitro*, while maintain their undifferentiated status preserving their properties even after cryopreservation. Furthermore, dental pulp tissue can be maintained long time in culture providing unlimited source of IDPSC for future therapeutic applications. We also demonstrated that no significant changes in proliferative potential, stem cells markers expression profile and differentiation capacities in both, early and late isolated IDPSC populations were observed. These data can contribute significantly to the practical application of IDPSC in regenerative medicine. Therefore, this report describes that the hurdles of adult stem cells technologies have been overcome in the case of IDPSC. These stem cells present biotechnological product ready to go throughout stem cell-based therapy market.

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