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Establishment and cryopreservation of human mesenchymal stem cells from wharton's jelly of umbilical cord

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Introduction: Stem cells are special human cells that have the ability to develop into many different cell types and also have the ability to repair damaged tissues. Mesenchymal stem cells (MSCs) are currently considered as 'Medicinal Signaling Cells' and a promising resource in regard to cell-based regenerative therapy. Umbilical cord is a human term perinatal tissue which is easily attainable, and a promising source of stem cells with no associated ethical concerns.

Material and Method: Wharton's jelly (WJ) is the gelatinous matrix that surrounds and provides protection to the umbilical cord blood vessels. Being more primitive, MSCs from human umbilical cord exhibit greater proliferative capacity and immunosuppressive ability. Thus as compared to adult stem cells it gives them a therapeutic advantage.

Conclusion: Being a primitive stromal cell population, WJ-MSCs offer the advantage of faster proliferation rate and reduced immunogenicity as compared to adult tissue derived MSCs. Hence, successful isolation of robustly proliferating healthy MSCs from WJ of human umbilical cord, which retain all the basic MSC properties, assumes importance.

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