Induction of Apoptosis and Autophagy in AML cell line with Mesenchymal Stem Cell-derived Microvesicles

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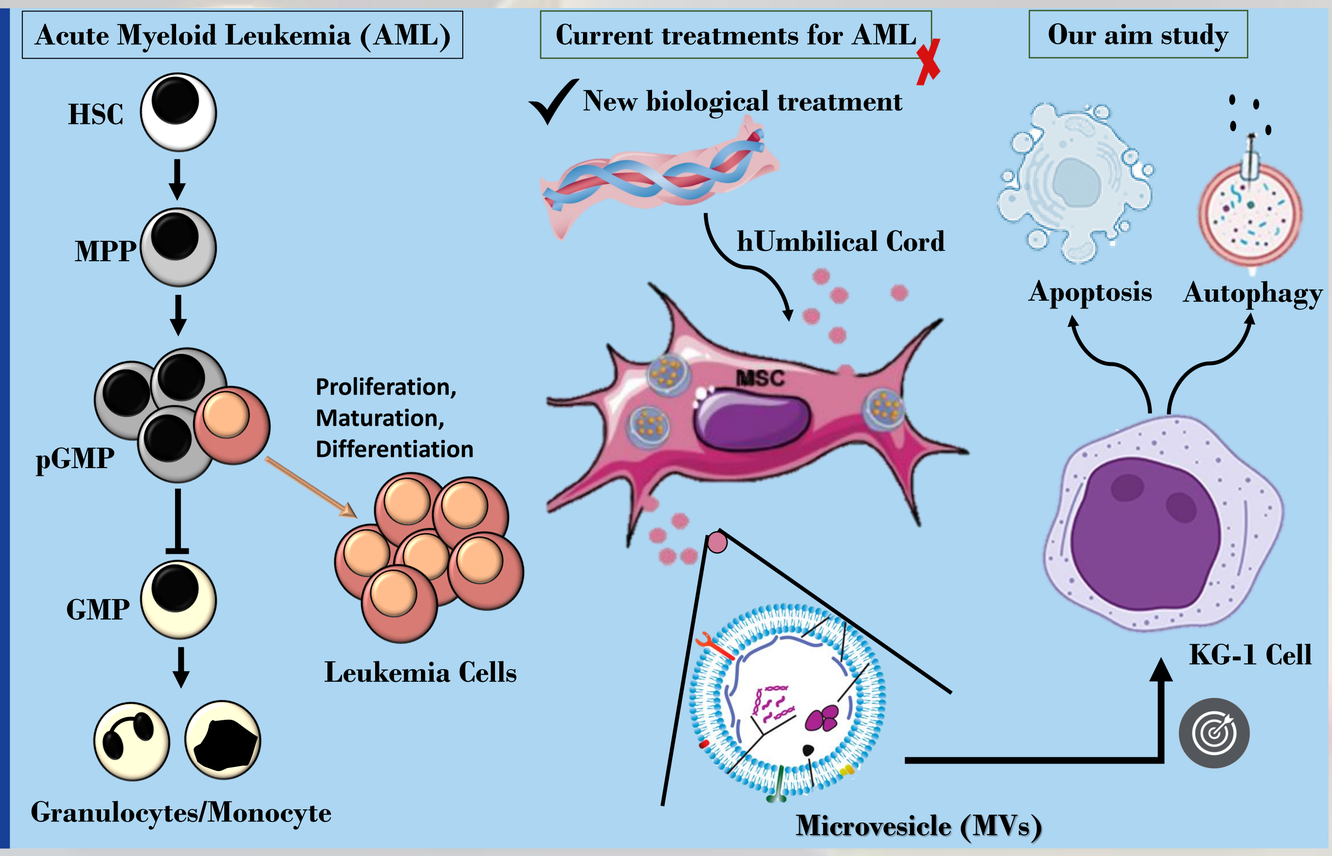
Introduction



Material and Methods

Preparation of KG-1 from Pasteur Institute and hUCMSCs (passage3) from Royan Research Institute

Identification of hUCMSCs by flow cytometry

Culture of KG-1 and MSCs in RPMI and DMEM culture media

Isolation of MVs derived hUCMSCs umbilical cord (passage6)

Confirm MVs using TEM, flow cytometry, and DLS.

Determination of MVs concentration by Bradford method

Treat KG-1 with hUCMSC-MVs at [25], [50], and [100] µg/ml for 24 hours

Apoptotic and Autophagy genes Expression (*BCL2*, *BAX*, *Beclin1*, *LC3*, and *ATG7*) by RT-PCR

Apoptosis assay (Annexin V/PI staining) and ROS assay by flow cytometry

Statistical Analysis: GraphPad Software and ANOVA. All experiments performed herein were replicated three times. Pv≤0.05 was considered statistically significant.

Results

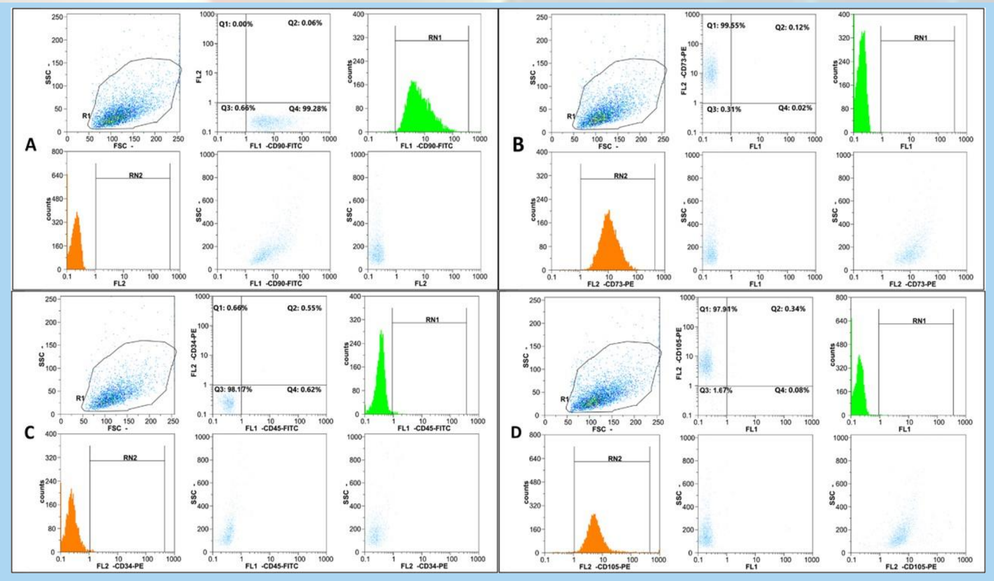


Fig1: Identification of hUCMSCs. CD34-,CD45-,CD105+,CD73+,CD90+

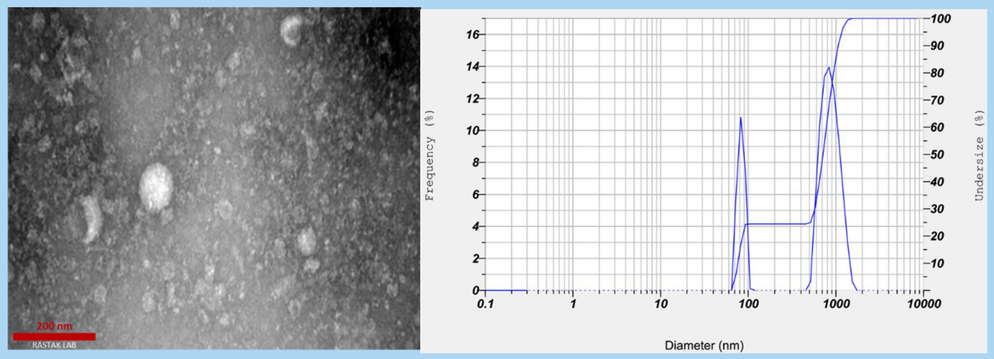


Fig2: Identification of hUCMSC-MVs by TEM and DLS.

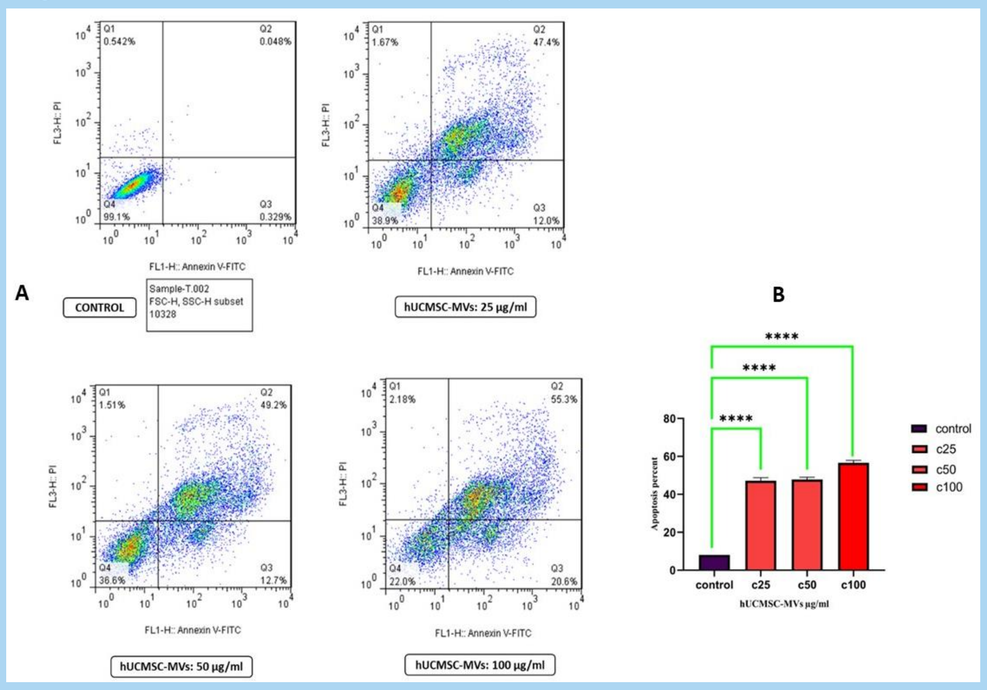


Fig3: Effect of hUCMSC-MVs on Apoptosis of KG-1 cells.

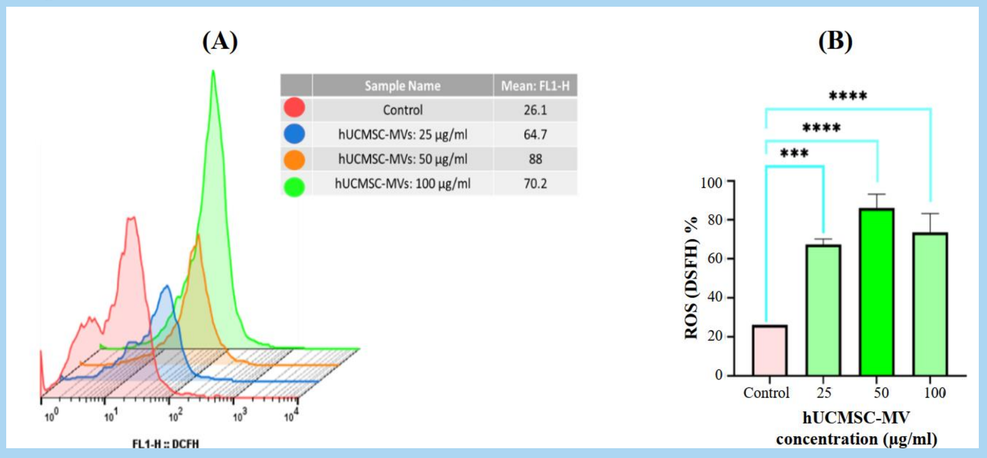


Fig4: Intracellular ROS levels after hUCMSC-MVs treatment in KG-1 cells.

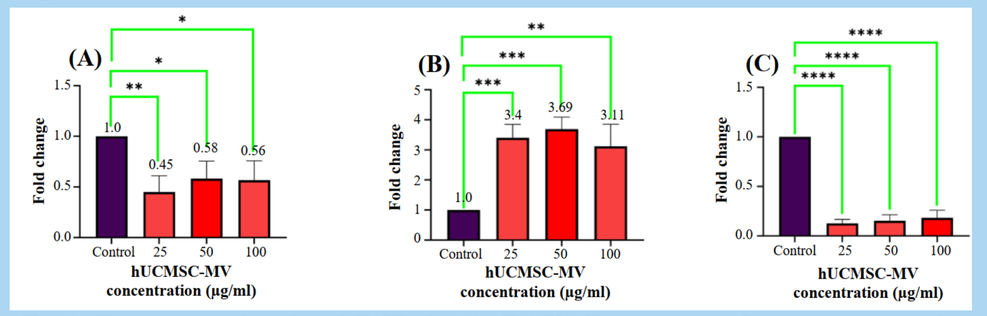


Fig5: Expression levels of BCL-2(A), BAX (B) genes and comparison of BCL-2/BAX (C) gene expression in KG-1 cells.

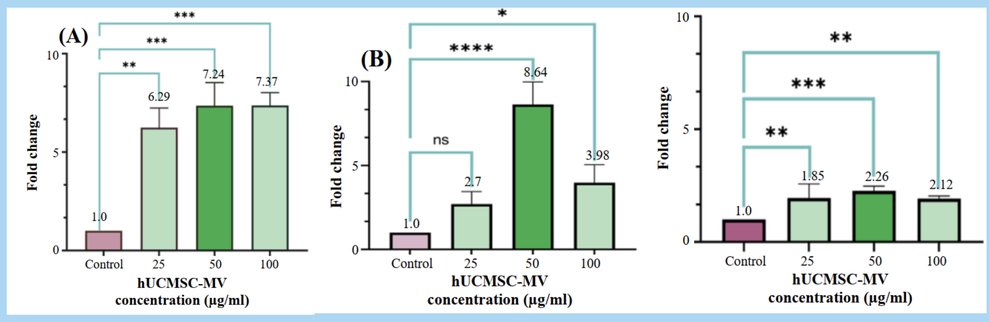
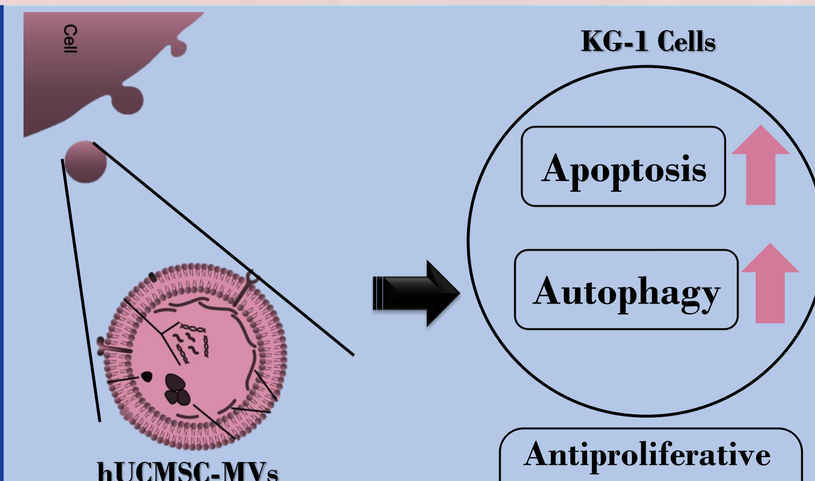


Fig6: Expression levels of Beclin 1(A), LC3(B), and(C) ATG7 genes in KG-1 cells after treatment with hUCMSC-MVs

Conclusion



hUCMSC-MVs may be a potential approach for cancer therapy as a novel cell to cell communication strategy.

Acknowledgment

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