

Human mesenchymal stem cells protect neutrophil from serum deprived cell death.

ABSTRACT

We have previously shown that human MSC (mesenchymal stem cells) inhibit the proliferation of most of the immune cells. However, there are innate immune cells such as neutrophils and other PMN (polymorphonuclear) cells that do not require an extensive proliferation prior to their effector function. In this study, the effect of MSC on neutrophils in the presence of complete and serum-deprived culture media was investigated. In the presence of MSC, the viability of neutrophils increase as measured in 24 h of incubation at various supplementation of serum concentration. We have utilized Annexin V and PI (propidium iodide) staining to confirm whether the enhancement of neutrophil's viability is due to a reduction in PCD (programmed cell death). MSC significantly rescue neutrophils from apoptosis at 1, 5 and 10% of FBS (fetal bovine serum) supplementation. The fractions of viable and dead cells were increased and decreased respectively in the presence of MSC. Our results indicate MSC rescue neutrophils from nutrient- or serum-deprived cell death. However, whether this effect is exerted through a specific signalling pathway or confining neutrophils in resting state by MSC requires further investigation.

Keyword: Mesenchymal stem cells; Neutrophils; Apoptosis.