Effects of Myricetin on Mesenchymal Stem Cells Exposed to Oxidative Stress

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Background:
The mesenchymal stem cells (MSCs) have been widely used both in cell therapies. Myricetin is a flavonoid which suppresses oxidative stress and inflammation, reduces bioactivation of carcinogens, and affects cell signaling.

Aims:
The aim was to evaluate the effects of myricetin in the hydrogen peroxide (H2O2) oxidative stress model in MSCs by immunocytochemical staining and electron microscopy.

Methods:
The groups were determined by control, H2O2, myricetin and myricetin + H2O2 groups. The MSCs were treated with concentrations of 500 µM H2O2 and 5 µM myricetin for 24 hours. The MSCs ultrastructure and caspase-3, TIMP17 and TNF-α expressions were analyzed using transmission electron microscope and immunocytochemistry.

Results:
The effects of myricetin against H2O2 oxidative stress damage in the MSCs, an increase in cell count, decrease in caspase-3 and TNF-α immunocytochemistry staining, increase in Tim17 immunocytochemistry staining and decrease in degenerative cell morphology in electron microscopic were observed.

Conclusion:
Flavonoid myricetin may be a promising target for an alternative treatment option for increased cell viability, anti-apoptotic and anti-inflammatory effects in the MSCs.

Keywords:

Mesenchymal stem cell, myricetin

Reference:

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