ERYTHROPOIETIN PROTECTS CELLS FROM OXIDATIVE STRESS BY REDUCING OXIDATIVE DNA DAMAGE


ABSTRACT

Erythropoietin (EPO) was, at one time, considered only as an erythropoietic hormone-specific target. The protection of EPO is under the influence of a complex molecular uptake of cell death followed by the partial oxygen; presently, EPO has been shown to induce antithrombotic properties not in oxygen has been observed. Antioxidant genes are activated in response to different chemicals and stress. Erythropoietin is a proliferation factor for primitive erythropoietic cells, but a cell death-inducing factor for the erythroid cells due to an antiapoptotic function. We now demonstrate that EPO inhibits oxidative effects. In human bone marrow cells treated with EPO, the appearance of fluorescence, a decrease in fluorescence intensity, and probably the normal apoptosis may be observed. This process is indicative of increasing cytotoxicity and cell death.

Methods

Figure 3. Detecting Proliferation using HALO™-96 MeC

Figure 4. Detecting Oxidative DNA Damage using OxyFLOW™

Figure 5. Erythropoietin Acts Bi-Functionally by Inducing Proliferation of Primitive Erythropoietic Cells, but not of Differentiating Cells

Figure 6. Erythropoietin Inhibits Oxidative DNA Damage During Differentiation and Maturation of Human Bone Marrow Cells into Mature Red Blood Cells

Figure 7. The Effect of Erythropoietin on Human CFU-E

Figure 8. Controls - Figure 8.

Figure 9. Cells Incubated with EPO for 24 hrs followed by incubation with 1mM MeB + Light

When a compound induces oxidative DNA damage, the fluorescence intensity increases. At high compound doses, a decrease in fluorescence intensity may be observed. This process is indicative of increasing cytotoxicity and cell death.

For erythropoietin, a decrease in fluorescence intensity with increasing erythropoietin concentrations does not indicate cell death, but increased survival. The results shown here indicate that erythropoietin protects the cells from oxidative DNA damage and probably the normal apoptosis programe to maintain cell survival, differentiation and maturation.