

P011 NF- κ B and Apoptosis In Bovine Neutrophils

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The choice between life and death is one of the major events in the regulation of the immune system. If inflammation occurs, cell death must be delayed, but once the infection is under control, the inflammatory response should be terminated and apoptosis of immune cells may take place. The transcription factor NF- κ B is known to strongly affect the ultimate outcome of a cell's fate. In fact, this protein complex exerts an anti-apoptotic activity, as it is able to induce the expression of a number of genes of which the products can inhibit death.

Among the myeloid cells, neutrophils are most numerous present. They also rank among the first blood cells that migrate towards inflammatory lesions to perform host defense functions. The most important members of the NF- κ B family were shown to be present in human neutrophils. Their anti-apoptotic role became clear as these proteins are activated by various inflammatory stimuli, which happen to make neutrophils less susceptible to apoptosis. Moreover, inhibition of NF- κ B activation by blocking its nuclear import or by preventing the degradation of I- κ B resulted in increased apoptosis.

Bovine neutrophils are the predominant cell type activated in some important cow diseases such as mastitis. Here we demonstrate that also in these cells members of the NF- κ B family are expressed. Furthermore, as for human neutrophils, these proteins also seem to be necessary to prevent apoptosis in bovine neutrophils. After administration of gliotoxin, diminished activation of NF- κ B was clearly seen and this was strongly correlated to increased apoptosis. In the future, the modulation of NF- κ B activity and apoptosis by inflammatory modulators will be documented in bovine neutrophils, *in vitro* and *in vivo*.