P-143 ANTIOXIDANT N-ACETYLCYSTEINE (NAC) DOWN-REGULATES APOPTOSIS-RELATED GENES IN RETINAL PIGMENT EPITHELIAL (RPE) CELLS UNDER HYPOXIA CONDITIONS

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Hypoxia triggers apoptotic damage by inducing mitochondrial disfunction and reactive oxygen species production. Oxidative stress is, among other factors, probably related to eye pathologies as age-related macular degeneration or diabetic retinopathy.

Previous studies of our group using RPE cells under hypoxia conditions, as a oxidative stress model, show that antioxidants as N-acetylcisteine (NAC) or vitamin C protect cells against hypoxia-induced apoptosis. The aim of this work is to study the effect of hypoxia on the expression of various apoptosis-related genes and the effect of NAC treatment under this stress stimulus.

We incubated RPE cells at 3% O_2 atmosphere, with and without 10 mM NAC treatment. RNA of RPE cells was purified, and gene expression was analyzed by semiquantitative RT-PCR. To analyze the results we developed devoted software that isolated band fragments through a binarization process. Resulting band fragments were then processed to obtain the intensity average.

The analysis showed us that hypoxia changed the expression levels of apoptosis-related genes. NAC treatment on stressed cells down-regulated the expression of fas, p53 and caspase7. These results suggest a possible explanation of the protective role of NAC against hypoxia-induced apoptosis in RPE cells. Thus, the results we present support the idea of the usefulness of antioxidant administration in order to prevent or delay retinal degenerative processes caused by oxygen-dependent pathophysiological conditions.