

P025 Presence and regulation of glutaredoxins in A549 and H292 cells.

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The anti-oxidant glutathione (GSH) is abundantly present in human lung. Its covalent binding to thiol groups in proteins, known as S-glutathionylation, is induced by oxidants and GSH removal is catalysed by glutaredoxins (GRXs).

In this study we investigated the presence and regulation of GRXs in A549, a human alveolar epithelial type II cancer cell line, and H292, a human bronchial epithelial cell line. A549 cells express more GRX1 than GRX2 mRNA, whereas the inverse was found in H292 cells. Furthermore, the levels of both GRX1 and GRX2 were higher in A549 cells. During culture both cell lines expressed more GRX1 mRNA over time, indicating a possible positive feedback loop. In order to investigate the regulation of GRXs, A549 and H292 cells were stimulated with $\text{TNF}\alpha$ and $\text{IL-1}\beta$. This resulted in an increased expression of GRX 1 and overall GRX activity, whereas there was a decrease with LPS and EGF addition. None of the treatments altered mRNA expression of GRX2.

We conclude that expression of GRXs in alveolar and bronchial epithelial cells is different, which can predict a difference in function of GRXs in both lung compartments. Furthermore, cytokines can influence the expression of GRX1, but not GRX2, indicating differential regulation of both genes. Lastly, these results demonstrate a link between inflammation and GRX1, and thus possibly protein S-glutathionylation, which could in turn influence inflammatory processes.