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Poster Sessions

Idebenone has preventative and therapeutic effects on pulmonary fibrosis via preferential suppression of fibroblast activity

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Background: Alveolar epithelial injury and abnormal collagen production by activated fibroblasts is involved in the onset and exacerbation of idiopathic pulmonary fibrosis (IPF). Compared with alveolar epithelial cells, lung fibroblasts exhibit an apoptosis-resistance phenotype that appears to be involved in IPF pathogenesis. Thus, we screened for chemicals eliciting preferential cytotoxicity of LL29 cells (lung fibroblastst) compared with A549 cells (lung alveolar epithelial cell) from medicines already in clinical use.

Results: We identified idebenone, a synthetic analogue of coenzyme Q10 (CoQ₁₀). Idebenone induced cytotoxicity in LL29 cells at a lower concentration than in A549 cells, a feature that was not observed for CoQ₁₀ and two IPF drugs (pirfenidone and nintedanib). Administration of idebenone improved pre-developped pulmonary fibrosis and bleomycin-induced increases in lung myofibroblasts, whereas administration of CoQ₁₀ had no effect. *In vitro*, treatment of LL29 cells with idebenone, but not CoQ₁₀, suppressed TGF- β -induced collagen production.

Conclusions: We propose that idebenone may be more therapeutically beneficial for IPF patients than current treatments.