

LTRC Concept Sheet # 05-02-0001

Research Study of COPD Using LTRC Specimens and Data

Abstract: We propose that there is a lung structure maintenance program in the adult lung which “provides homeostasis” and replaces dying cells. Data indicate that vascular endothelial growth factor (VEGF) plays a central role in this maintenance program. Our data reveals that severe emphysema lung demonstrates large numbers of alveolar septal cells undergoing apoptosis as well as a decreased expression of the VEGF gene and protein.¹⁻⁷

We propose that alveolar septal cell apoptosis is a consequence of diminished VEGF-dependent cell survival, which coupled with impaired cell replacement, leads to emphysema. Further, impaired phagocytotic removal of apoptosed cells contributes to the chronic, low-grade inflammation in COPD lungs. Our hypothesis is that the VEGF gene and protein expression is decreased in the lungs of patients with emphysema due to oxidant-dependent impairment of VEGF transcription.