COPD (chronic obstructive pulmonary disease) has been a menace to the healthcare community since the beginning of time. It is the 5th leading cause of adult death worldwide, and the 4th leading cause of death in the United States. It is estimated that 16 million Americans are currently diagnosed with COPD, and an additional 14 million are in the beginning states of the disease and have not yet been diagnosed. COPD is progressive, is a life-changing event, and is ultimately fatal. But soon we may be able to do something to improve the odds and actually slow down the progression of the disease.

A group of German researchers have discovered a way to slow down the progression of COPD and in some cases actually reverse the lung damage caused by it. The results of a study were published in the scientific journal *Cell* (*Cell*, Volume 147, Issue 2, 293-305, 14 October 2011).

COPD, which is actually a blanket term that includes chronic bronchitis and emphysema, often coincides with pulmonary hypertension, although it is unclear if pulmonary hypertension is a consequence of COPD or actually part of the cause. However, researchers have discovered that pulmonary hypertension and emphysema have been directly linked to the presence of an enzyme known as nitric oxide synthase (iNOS), which supports the formation of nitric oxide. This nitric oxide system is important for the maintenance of vascular tone, which can affect systemic blood pressure, pulmonary blood pressure, and workload of the heart. However, in high concentrations nitric oxide can lead to the formation of peroxynitrite, which causes the destruction of lung tissue by altering protein functions.

Using mice that have been chronically exposed to cigarette smoke it was discovered that by inhibiting nitric oxide synthase (in the study an iNOS inhibitor known as L-N6-(1-iminoethyl)-lysine was used) the mice were actually resistant to the development of COPD and pulmonary arterial hypertension. In the group of control mice that have been previously diagnosed with COPD introducing an iNOS inhibitor actually began to reverse the lung damage that was present.

Selective iNOS inhibitors have already been used in clinical trials with a great deal of success and very few reported side effects. This is great news for both the healthcare community and the patient population who have either already been diagnosed with COPD or are at risk for developing the disease. So it seems that the light at the end of THIS tunnel may be closer than we realized. Until next time…