# Oxidative and Nitrosative Stress in Lungs of Chickens, Gallus domesticus, With Pulmonary Hypertension

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Pulmonary hypertension has been thought to involve oxidative stress and reduced availability of nitric oxide. Pulmonary hypertension was induced in day old broiler chickens for maintained for 30 days in hypobaric-hypoxic conditions; age matched normoxic birds were controls. Birds were then euthanized and the lungs were fixed and processed for cerium based cytochemical localization of oxidative stress using NADH oxidase (NOX) and xanthine oxidase (XO) as biomarkers for oxidative stress and immunocytochemical localization of nitrotyrosine as a biomarker for nitrosative stress. Transmission electron microscopy and scanning confocal microscopy were used to examine sections of the lungs. NOX and XO were localized using cerium based cytochemistry and occurred throughout the lungs in all cell types but most extensively in the plasma membrane of endothelial cells of the vascular system of the lungs and in epithelial cells of the lung. Peroxynitrite was localized using antibodies to nitrotyrosine, a biomarker for peroxynitrite and loss of nitric oxide. Quantitation of the oxidative (NOX and XO) stress and nitrosative stress indicated increased NOX and decreased XO in the hypobaric birds as compared to normoxic control birds while there was increased peroxynitrite (reduced nitric oxide) in the birds with pulmonary hypertension.

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