# Increased Oxidative Stress Correlates With Pulmonary Vascular Response to Vasodilators in Pulmonary Artery Hypertension Patients

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**Background:** Pulmonary Arterial Hypertension (PAH) is characterized by endothelial dysfunction and vascular remodeling. The role of oxidative stress, inflammation and its relation with peripheral endothelial function and pulmonary vascular response to vasodilators remains unknown.

**Methods:** PAH patients diagnosed by right cardiac catheterization with a pulmonary CT-scan negative for pulmonary embolism and a control group matched by age and gender were included. Malondialdehyde (MDA), xanthine oxidase (XO) and vascular adhesion molecule (VCAM) were measured in all subjects. Peripheral endothelium-dependent vasoreactivity was assessed using brachial artery blood flow-mediated dilation (FMD). Transthoracic echocardiography pre and post Iloprost inhalation was performed.

**Results:** Fifteen patients (mean age 37 ± 7, 60% female) and 15 controls were included. Baseline (mean ± SD):

| | PAH | Control | p * |
|---|---|---|---|
| FMD (%) | 2.8 ± 0.6 | 8.7 ± 0,6 | < 0.001 |
| XO (U/mL) | 0.039 ± 0.005 | 0.034 ± 0.004 | 0.02 |
| MDA (µM) | 0.64 ± 0.17 | 0.34 ± 0.15 | < 0.001 |
| VCAM | 1167.4 ± 337 | 965.3± 267 | 0.09 |

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Iloprost in PAH patients improved cardiac output (3.68 ±0.6 L/min to 4.12 ± 1.2; p=0.02) and pulmonary vascular resistance (3.4 ± 0.9 Wood U to 2.94 ± 1.1; p=0.01). A significant correlation between cardiac output improvement and FMD (R= 0.7, p<0.01) was found. XO showed a strong correlation with FMD (R= -0.8, p<0.01), pulmonary vascular resistance decrease (R= -0.9, p<0.01) and cardiac output improvement (R=-0.7, p=0.01).

**Conclusion:** PAH patients present elevated oxidative stress markers and impaired FMD at baseline. These parameters correlates with pulmonary vascular response to vasodilators.