

Abstract Submitted
for the GEC12 Meeting of
The American Physical Society

Pulmonary and heart diseases with inhalation of atmospheric pressure plasma flow TAKAMICHI HIRATA, Department of Biomedical Engineering, Nano Carbon Bio Device Research Center, Tokyo City University, Tokyo, 158-8557, Japan, SHIGERU MURATA, TAKUMI KISHIMOTO, Department of Biomedical Engineering, Tokyo City University, Tokyo, 158-8557, Japan, CHIHIRO TSUTSUI, Nano Carbon Bio Device Research Center, Tokyo City University, Tokyo, 158-8557, Japan, AKANE KONDO, Department of Obstetrics and Gynecology, Tokai University, Kanagawa, 259-1193, Japan, AKIRA MORI, Department of Biomedical Engineering, Nano Carbon Bio Device Research Center, Tokyo City University, Tokyo, 158-8557, Japan — We examined blood pressure in the abdominal aorta of mini pig under plasma inhalation of atmospheric pressure plasma flow. The coaxial atmospheric pressure plasma source has a tungsten wire inside a glass capillary, that is surrounded by a grounded tubular electrode. Plasma was generated under the following conditions; applied voltage: 8 kVpp, frequency: 3 kHz, and helium (He) gas flow rate: 1 L/min. On the other hand, sphygmomanometry of a blood vessel proceeded using a device comprising a disposable force transducer, and a bedside monitor for simultaneous electrocardiography and signal pressure measurements. We directly measured Nitric oxide (NO) using a catheter-type NO sensor placed in the coronary sinus through an angiography catheter from the abdomen. Blood pressure decreased from 110/65 to 90/40 mm Hg in the animals *in vivo* under plasma inhalation. The NO concentration in the abdominal aorta like the blood pressure, reached a maximum value at about 40 s and then gradually decreased.

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Date submitted: 01 Oct 2012

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