

arsenic affects vasomotor tone in blood vessels, we investigated the effect of arsenic on agonist-induced vasorelaxation using the isolated rat aortic rings in in vitro organ bath system. Treatment with arsenite inhibited acetylcholine-induced relaxation of aortic rings in a concentration-dependent manner. The inhibitory effects by arsenic were also observed in the relaxation induced by sodium nitroprusside, a NO-donor. Consistent with these findings, the cGMP levels stimulated by acetylcholine in blood vessels were reduced significantly by arsenite treatment. In addition, higher concentration of arsenite decreased the relaxation by 8-Br-cGMP, a cGMP analog, in aortic rings without endothelium. These in vitro results indicated that arsenite was capable of suppressing acetylcholine-induced relaxation in blood vessels by inhibiting production of nitric oxide in endothelial cells and by impairing the relaxation machinery in smooth muscle cells. In vivo studies revealed that the reduction of blood pressure by acetylcholine infusion was significantly suppressed after arsenite was administered intravenously to rats. These data suggest that vasomotor tone impaired by arsenite exposure may be one of the contributing factors in development of cardiovascular disease.

[PA3-14] [04/17/2003 (Thr) 14:00 - 17:00 / Hall P]

Evidence of TCDD-like activities in crude and fractionated extracts of PM 2.5 diesel particle material using EROD-microbioassay.

Jang HyungSeok^o, Han KyuTae, Oh SeungMin, Chung KyuHyuck

College of Pharmacy, SungKyun University 300, suwon, Kyungkido 440-746, Korea

Diesel motors exhaust particulate material, which is known to be mutagenic, has caused heavy air pollution. PM 2.5 diesel exhaust of vehicle was collected using a high-volume sample equipped with a cascade impact. The crude extract was fractionated according to EPA recommended procedure into seven fractions by acid-base partitioning and silica gel column chromatography. We examined Ah receptor-mediated activities of fractionated samples using EROD-microbioassay in H4IIE rat hepatoma cell line and HepG2 human hepatoma cell line. EROD-microbioassay was conducted to determine cytochrome P4501A activity in environmental samples, and the TCDD equivalent concentration (TEQ) was calculated for the quantitative assessment. The biological TEQ was calculated by comparing the concentration response curve of the sample with those of the TCDD calibration curve. In the results, we confirmed that a large quantity of TCDD-like components was presented in PM 2.5 diesel exhaust particulate materials. Higher potency was observed in crude extract and nonpolar fraction. Since, it is reported that aliphatic and aromatic compounds such as chlorinated hydrocarbons, PAH and their alkyl derivatives are contained in nonpolar fraction, we presume that these chemicals may relate to TCDD-like activities.

[PA3-15] [04/17/2003 (Thr) 14:00 - 17:00 / Hall P]

Inorganic Arsenic Increases Vasoconstriction through Calcium-Sensitization in Vascular Smooth Muscles

Lee MY^o, Lee YH*, Bae OK, Chung JH

College of Pharmacy, Seoul National University, Seoul 151-742, and *College of Medicine, Yonsei University, Seoul, 120-752, Korea