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TITLE: COMPARATIVE STUDY OF PATHOLOGICAL LESIONS INDUCED BY MULTIWALLED CARBON NANOTUBES IN LUNGS OF MICE BY INTRATRACHEAL INSTILLATION AND INHALATION

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ABSTRACT: The pathological lesions induced by multiwalled carbon nanotubes (MWCNTs) in bronchi and alveoli of mice were studied by intratracheal instillation and inhalation. In instillation groups, the dose was 0.05 mg MWCNTs/mouse. Similar size clumps of MWCNTs were distributed in bronchi and alveoli. The clumps led to inflammation to the lining wall of bronchi and severe destruction to alveolar netted structure around them. In the inhalation groups, the mice were exposed to aerosolized MWCNTs with mean concentration of 32.61 mg/m³, the intralung deposition dose were roughly 0.07, 0.14, and 0.21 mg in the 8-day group, 16-day group, and 24-day group, respectively. Most of aggregations of MWCNTs in the alveoli were smaller than that in bronchi. The aggregations induced proliferation and thickening of alveolar walls. With the exception of these moderate pathological lesions, the general alveolar structure was still remained. The preliminary study demonstrated a difference in lung pathological lesions induced by instilled MWCNTs and inhaled ones, which may be due to the different size and distribution of aggregations of MWCNTs in lung. (C) 2007 Wiley Periodicals, Inc. Environ Toxicol 22: 415-421, 2007.