# Influences on Pulmonary Inflammation and Lung Tumor of Nanosized $SiO_2$ in A/J Mice

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Recently, with rapid development of nanotechnology, safety of nanomaterials has been getting a lot of attention by people. Although the lungs are major target organ for dust particles, the effects of nanosized particles on the lungs have received little attention. This study was conducted whether to determine influences on the pulmonary inflammation and lung tumor development of nanosized $SiO_2$ in A/J mice that are sensitive to lung injury. A total of 126 male A/J mice, 5 weeks old, were divided into four groups (group 1:nontreatment, group 2: $SiO_2$ alone, group 3:urethane alone and group 4:urethane followed by $SiO_2$). Group 2 and 4 were divided into subgroup as $SiO_2$ doses (0 2, 10, and 50 mg/kg, respectively). Mice of group 3 and 4 were intraperitoneally injected with urethane(1mg/g b.w.). After one week, mice of group 2, 3 and 4 were administered with nanosized $SiO_2$(14nm) through intratracheal instillation. All animals were sacrificed at 24h, 1 week, 4 weeks and 14weeks after $SiO_2$ administration, respectively. The lungs were removed and analyzed by BAL (bronchoalveolar lavage) method. Relative lung weight of mice treated with $SiO_2$ at high dose (50mg/kg) for 1 week and 14 week were significantly increased compared to that of control. $SiO_2$ at high dose (50mg/kg) also induced severe lung inflammation in histopathological observation. Lung tumor multiplicity of mice treated with $SiO_2$ at high dose (50mg/kg) were significantly increased compared to that of control. These results indicate that nanosized $SiO_2$ induced inflammation in early stage and enhanced lung tumor development in later stage.

Key words: Nanosized $SiO_2$, Lung tumor, A/J mice, BAL