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Changes of pulmonary function during 60 days of welding fume exposure period in SD rats.

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Respiratory effects in full time welders include bronchitis, airway irritation, lung function changes, and lung fibrosis. Welder's pneumoconiosis has been generally determined to be benign and not associated with respiratory symptoms based on the absence of pulmonary function abnormalities in welders with marked radiographic abnormalities. Accordingly, to investigate pulmonary function changes during 60 days induced by welding-fume exposure, male Sprague-Dawley(SD) rats were exposed to manual metal arc-stainless steel (MMA-SS) welding fumes with concentrations of 64.8±0.9(low dose) and 107.8±2.6 ㎎/㎥ (high dose) total suspended particulates for 2 hr/day, 5 day/week in an inhalation chamber for 60 days. Pulmonary function was measured every week with whole body plethysmograph compensated(WBP Comp, SFT38116, Buxco Electronics, Sharon, CT). The rats exposed to the high dose of welding fumes exhibited statistically significant ($P<0.05$-0.01) body weight decrease as compared to the control during the 60 days exposure period. And only tidal volume was significantly decreased in dose-dependant relationship during 60 days of MMA-SS welding fume exposure. This pulmonary function change confirms the lung injury caused by the MMA-SS welding fume exposure.

Keyword : welding fume, pulmonary function test