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Title: Time-dependency of lung recovery after a 4-week exposure to traffic and sugar cane burning air pollutants

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Body: Exposure to total particulate matter from urban air pollution (UP) or biomass burning (BP) has been associated with lung impairment. We investigated the time-dependency of lung functional recovery in BALB/c mice exposed to UP or BP particles. During 4 weeks they weekly received 3 nose-only instillations of 15 μ L of distilled water (C) or UP or BP (15 μ g/15 μ L saline). Mice were weighed weekly. 1 (C1, UP1, BP1), 2 (C2, UP2, BP2), 7 (C7, UP7, BP7) or 14 (C14, UP14, BP14) days after the last instillation, pulmonary mechanics, FRC and histology were measured; catalase and superoxide dismutase activities were evaluated in lung homogenates. Body mass gain was similar among the groups. Pulmonary elastance and its viscoelastic component (cmH₂O/mL), resistive and viscoelastic pressures (cmH₂O) were higher in UP1 (31.1 \pm 1.6, 7.2 \pm 0.3, 0.8 \pm 0.04; 1.5 \pm 0.1, respectively) and BP1 (31.0 \pm 0.4, 6.6 \pm 0.3, 0.8 \pm 0.04, 1.4 \pm 0.1) than in C1 (23.5 \pm 1.6, 4.3 \pm 0.1, 0.6 \pm 0.04, 0.8 \pm 0.1, respectively). These parameters returned to control values at day 2, except for resistive pressure that normalized at 7 days. Alveolar collapse (%) was larger in UP1 (21.8 \pm 5.9) and BP1 (23.2 \pm 1.9) than in C1 (1.7 \pm 0.3) and returned to baseline at 7 days, while bronchoconstriction index and alveolar and bronchial lesion scores increased in UP1 (2.3 \pm 0.2, 3.0 \pm 0.3 and 2.3 \pm 0.4, respectively) and BP1 (2.3 \pm 0.2, 2.8 \pm 0.3 and 2.3 \pm 0.4, respectively) in relation to C1 (1.5 \pm 0.2, 1.0 \pm 0.3 and 0.8 \pm 0.4, respectively) and normalized in 2 days. No differences were found in FRC and oxidative stress. Thus, a 4-week exposure to UP and BP induced lung impairment that resolved 7 days after the last exposure. Supported by: FAPERJ, CNPq, MCT.