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# The Effect of Short-Term Exposure in $PM_{0.1}$ on Cardiac Remodeling and Dysfunction in Myocardial Infraction Mice

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**Abstract:** We aimed to illustrate the association between short-term exposure $PM_{0.1}$ and heart failure in myocardial infarction (MI) mice. Six-week-old ICR mice were divided into three groups randomly: sham group, MI group and MI exposure group, 12 mice in each group. LAD ligation operation was performed in MI group and MI exposure group. After postoperative two weeks MI exposure mice were put into ventilation chamber which filled with 500 ug/$m^3$ $PM_{0.1}$ for 6 hours per day, while MI group mice and sham group mice were cultivated in normal environment. After exposure 8 weeks, we use Vevo 2100 machine to acquire heart function measurements. Then we collected blood sample and killed mice to obtain heart samples. The proliferation of myocardium was measured by immunofluorescence. Elisa was performed to detect the catecholamine expression in plasma. The changes of collagen were measured by Sirus red stain method. Compared with the sham group, the EF and FS in the MI group were significantly decreased ($p$<0.05), and MI exposure group showed higher amplitude decrease. The immunofluorescence result showed that the number of proliferating cell in MI exposure group did not change significantly. In addition, the IL-11 in the peripheral blood of MI exposure group did not change significantly, while Sirus red stain showed the content of collagen in MI exposure group increased significantly ($p$<0.05). In conclusion, short-term exposure in $PM_{0.1}$ can exacerbate cardiac remodeling and dysfunction, while it had effect neither on IL-11 in peripheral blood nor on myocyte proliferation.

**Keywords:** Myocardial infraction, short-term exposure, $PM_{0.1}$, cardiac remodeling.

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