Supplementary Materials

Methods

Invasive assessment of hemodynamics and echocardiographic measurements

Both the assessment of hemodynamic and echocardiographic measurements was tested at 3 days after surgery. Noninvasive transthoracic echocardiography was performed in mice using a Sequoia 512 system with a 17L-5 probe (Siemens, Germany). Mice were anesthetized with inhalational isoflurane at a concentration of 1.5% and fixed. Two-dimensional short-axis views of the LV were obtained for guided M-mode measurement of end-diastolic diameter (LVEDd), and end-systolic diameter (LVESd). LV fractional shortening (FS) was calculated as follows: LVFS (%) = (LVEDd - LVESd) / LVEDd × 100. LV hemodynamic was evaluated before sacrifice of the animals. Mice from each group were anesthetized with a combination of xylazine and ketamine. A millar catheter was inserted via the right carotid artery and carefully introduced into the LV to measure the systolic pressure (LVSP), end-diastolic pressure (LVEDP), and maximum and minimum rates of change in the LV pressure (max d*p*/d*t* and min d*p*/d*t*, respectively). The contractility index (max d*p*/d*t* divided by the pressure at the time of max d*p*/d*t*) was calculated using a software program (Blood Pressure Module).

TUNEL assay

Apoptosis in cultured cardiomyocytes, fibroblasts and myocardium was determined using TUNEL assay. Briefly, apoptotic cells were detected with an In situ cell death Detection kit, TMR red (Roche, Switzerland). The sections were treated with proteinase K for 20 min, incubated with TUNEL reaction mixture or negative control solution for 60 min at 37° C and then stained with the DAPI (4',6-diamidino-2-phenylindole) solution for 10 min. Rinse slides twice with phosphate buffered saline (PBS) between each step. The positive rate of TUNEL-labeled nuclei was calculated from four different and randomly selected areas under confocal microscopy.

Table S1. Sequences of primers used for RT-PCR

Name	Sequences	Product（bp)	TM (℃)
periostin(mouse)	(F) 5’-CCTGCCCTTATATGCTCTGCT -3’	300	53
	(R) 5’- AAACATGGTCAATAGGCATCACT-3’		
β-actin(mouse)	(F) 5’-TTCTACAATGAGCTGCGTGTGGC-3’	456	58
	(R) 5’-CTCATAGCTTCTCCAGGGAGGA-3’		
GADPH（rat）	(F) 5’-TGAAGGTCGGTGTGAACGGATTTGGC-3’	986	55
	(R) 5’-CATGTAGGCCATGAGGTCCACCAC-3’		
Periostin(rat)	(F) 5’-TCAGGGGTCGGGATCAGGGC-3’	223	59
	(R) 5’-ACGATGCCCAGCGTGCCATA-3’		
GADPH(rat)	(F) 5’-TGAAGGTCGGTGTGAACGGATTTGGC -3’	987	52
	(R) 5’-CATGTAGGCCATGAGGTCCACCAC -3’		
GDF-15(mouse)	(F)5'-CGCCCTGGCAATGCCTGA-3'	257	60
	(R)5'-GCACGCGGTAGGCTTCGGGG-3'		
GDF-15(rat/mouse)	(F)5'-GAGCTACGGGGTCGCTTC-3'	130	60
	(R)5'-GGGACCCCAATCTCACCT-3'		
β-actin(mouse)	(F)5'-TGGACAGTGAGGCAAGGATAG -3'	101	60
	(R)5'-TACTGCCCTGGCTCCTAGCA-3'		

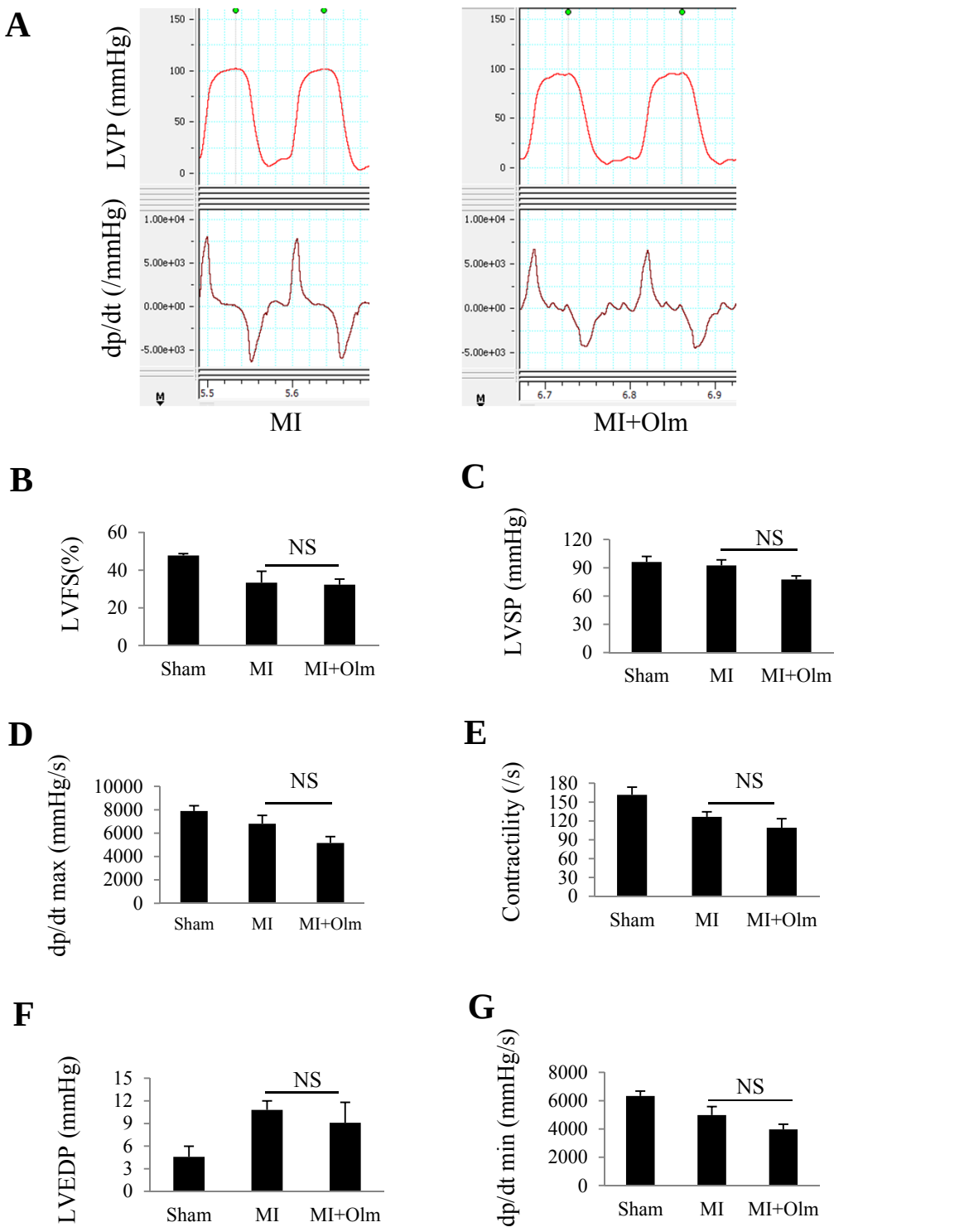

Figure S1. Left ventricular (LV) hemodynamics and fractional shortening (LVFS) in mice with myocardial ischemia (MI) for 3 days. (A) Representative recording of LV pressure and change rate. **(B)** Results of LV fractional shortening (LVFS), n=6, 5, 10 in sham, MI and MI+Olm group, respectively. **(C)** LV systolic pressure (LVSP). **(D)** Maximum rate of LV pressure (dp/dt max). **(E)** LV contractility. **(F)** LV end-diastolic pressure (LVEDP). **(G)** Minimum rate of LV pressure (dp/dt min). NS, not significant, for panel C-F, n = 5 in each group. MI：myocardial infarction, Olm: olmesartan.

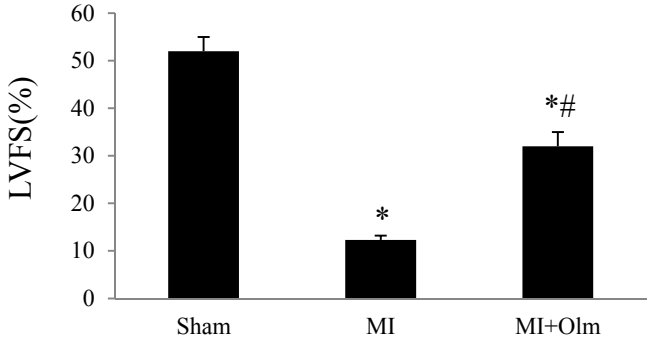

Figure S2. Left ventricular fractional shortening (LVFS) in mice with myocardial ischemia (MI) for 6 weeks. $^{*}P < 0.05$ vs. Sham; $^{\#}P < 0.05$ vs. MI group. Data are shown as the mean ± SEM, n = 12 in each group

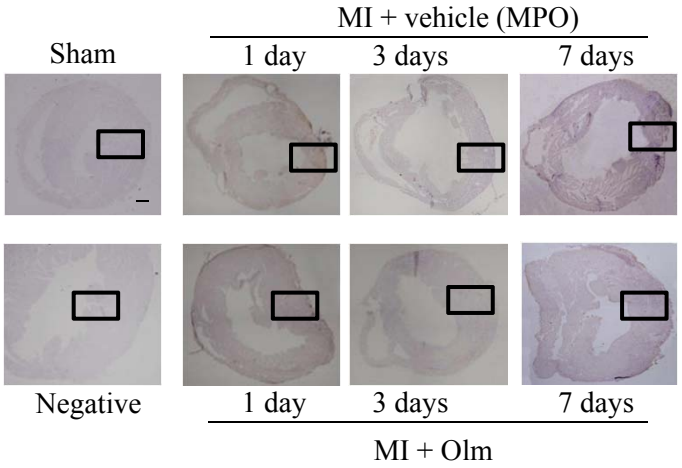

Figure S3. MPO stain in murine heart cross sections. Whole view of MPO (myeloperoxidase) stain of mouse hearts in Sham, MI and MI+Olm groups. Scale bar = 1mm. The area indicated by black box was magnified in Figure 2A.

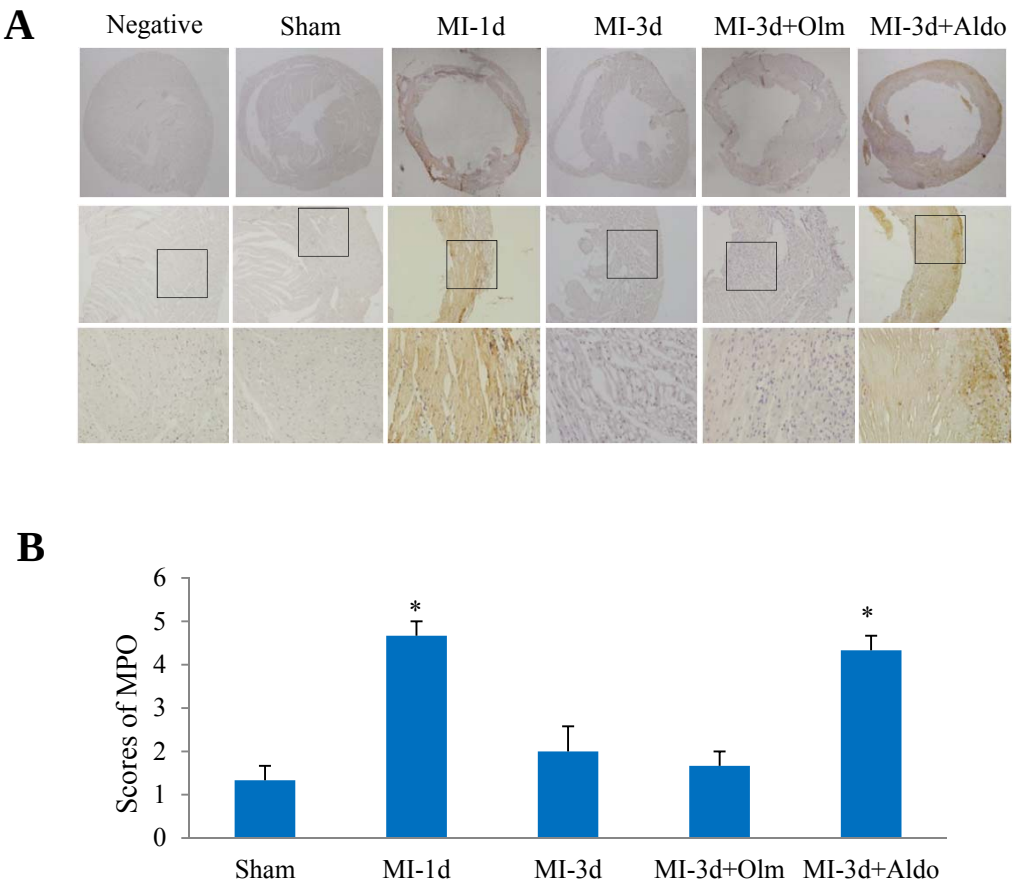

Figure S4. Immunohistochemical detection of MPO in myocardial infarction (MI) mice treated with/ without aldosterone. (A) Examples of picture show MPO staining in the heart cross section for whole view (40×, upper panels), magnification 100×(middle panels, black boxes were magnified in lower panels) and 400×(lower panels). Aldosterone (Aldo, 1.44 mg $kg^{-1}.d^{-1}$) or olmesartan (Olm,10 mg $kg^{-1}.d^{-1}$) treatment was given in MI mice for 3 days. **(B)** Semi-quantitative analysis of MPO expression using a score system in each group. *$P < 0.05$ vs. MI-3d group, n = 5 per group.

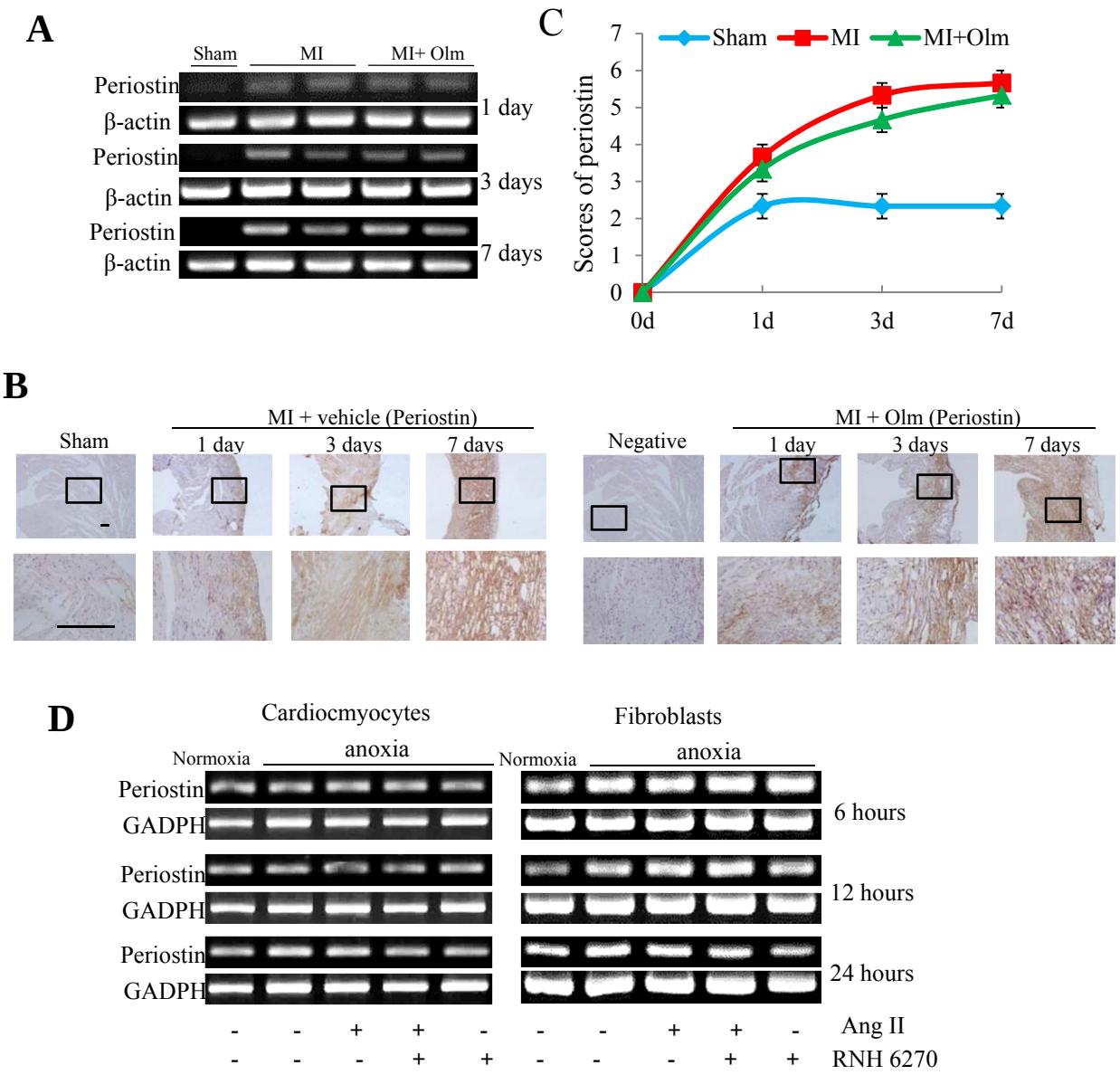

Figure S5. Time course of periostin expression in vivo and in vitro. **(A)** Dynamic changes of periostin gene expression in sham, MI and Olm treated groups and each group was exposed to ischemia for 1 day, 3 days, 7 days respectively. Olm had no effects on periostin expression after MI. **(B)** Immunohistochemical stain of periostin in sham, MI and Olm treated groups, each group was treated with ischemia for 1 day, 3 days and 7 days(Scale bar = 0.1mm). **(C)** Scores of periostin corresponding to the results of immunohistochemical stain, $p > 0.05$ MI vs. Olm treated groups, n = 3 in each group. **(D)** Changes of periostin gene expression in cultured cardiomyocytes and fibroblasts when being normoxia and anoxia for 6 hours, 12 hours and 24 hours respectively. Ang II (10^{-6} M)and RNH6270 (10^{-6} M) were added to the culture medium and the treated groups were divided into 5 groups: normoxia, anoxia ,anoxia+Ang II, anoxia+Ang II+RNH6270, anoxia+RNH6270. There showed no differences among anoxia treated groups at every time spot in cardiomyocytes or fibroblasts.

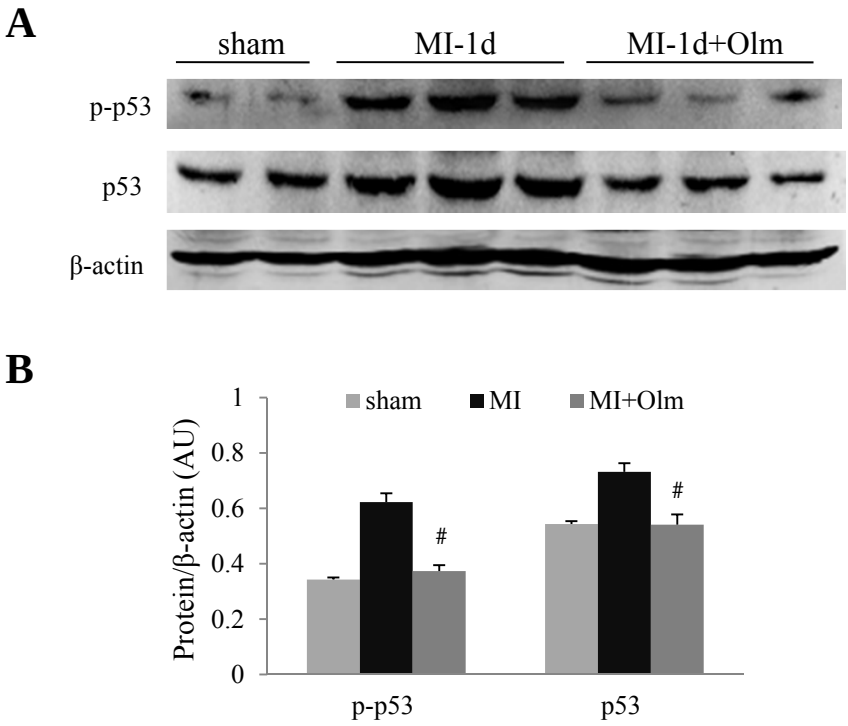

Figure S6. Olmesartan (Olm) inhibited apoptotic signal. (A) Western blots of myocardial p53 and p-p53 in mice at 24 hrs after myocardial infarction (MI) or sham. β-actin served as the loading control. **(B)** Semi-quantitative analysis of p53 and p-p53 expression in each group. $^{\#}P < 0.05$ vs. MI group, n = 4 in sham group, n = 6 in MI or MI + Olm group. AU, arbitrary unit.