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Ribose treatment improved heart function and reduced infarct size after myocardial infarction in rats

G Gonzales, R Gelpi, J Palleiro, S Rabald, HG Zimmer, A Deten
Carl-Ludwig-Institute for Physiology

In this study the effect of ribose on heart function and infarct size after permanent coronary artery occlusion was analyzed. Methods: Ribose was i.v. infused in 12 weeks old female Sprague-Dawley rats (100 mg/(kg x h)) beginning the day before surgery (MI+R, n=12). Myocardial infarction (MI) was induced in by ligation of left coronary artery. NaCl or untreated infarct rats (MI-CTRL, n=12) as well as sham-operated animals served as controls (sham, n=18). Six hours after MI left ventricular (LV) function was measured with Millar-tip catheters, and the hearts were analyzed by EvansBlue/TTC staining. Results: LVSP decreased to 86 ± 3 mmHg in MI-CTRL compared to 118 ± 4 mmHg in sham, but was restored to 109 ± 6 mmHg in MI+R 6 h after MI. Also, LV dP/dtmax (4.385 ± 248 , 6.319 ± 369 and 5.994 ± 459 mmHg/s in MI-CTRL, sham and MI+R, respectively) as well as LV dP/dtmin (-3.378 ± 228 , -6.129 ± 410 and -5.050 ± 424 mmHg/s) improved by ribose treatment. The infarct size 6 h after MI was reduced from $35 \pm 4\%$ of the area at risk in MI-CTRL to $17 \pm 4\%$ in ribose treated rats, despite a comparable area at risk in both groups ($57 \pm 5\%$ vs $62 \pm 6\%$ of LV). Conclusion: LV function significantly improved by ribose treatment 6 h after MI. This seems to be based on slowing down the velocity of the necrotic wave front across the LV wall after MI resulting in smaller infarcts.