

Effect of L-arginine on Function of Mitochondria in Ischemia – Reperfusion Myocardial Cell in Rabbits

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(MDA) concentration, superoxide dismutase (SOD) activity, myocardial adenosine triphosphate (ATP), Adenosine diphosphate (ADP), adenosine monophosphate (AMP) content, the total amount of AMP (TAN), and energy charge (EC), were respectively determined.

Results: The mitochondrial respiratory control rate (RCR), state respiration rate (V3), and SOD in L-Arg +MIR group were significantly higher than those of MIR group, while state respiration rate (V4), $[Ca^{2+}]_m$, and MDA were significantly lower than those of MIR group, myocardial ATP, ADP, TNA and the EC were significantly higher than those of group MIR; when compared with the group C, there was no significant difference in terms of V3, V4, SOD, MDA, and AMP, TAN between the L-Arg +MIR group and control group (group C).

Conclusion: It is indicated that L-arginine can reduce the level of the oxygen free radicals and attenuate calcium overload to improve the function of myocardial mitochondria during myocardial ischemia reperfusion injury.

Model and Materials

100 rabbits were randomly divided into four groups: Control group (C), Myocardial Ischemia-Reperfusion (MI) group, L-Arginine + MI (L-A + MI) group, and L-Arginine + Control (L-A + C) group. The number of rabbits in each group was 25. The MI model was established by occluding the left anterior descending artery (LAD) for 30 minutes. The reperfusion was achieved by releasing the occlusion. The ECG II lead was recorded during the ischemia and reperfusion periods. The data were analyzed by one-way ANOVA.

Electrocardiogram

The ECG II lead was recorded during the ischemia and reperfusion periods. The ST-segment depression was measured as the difference between the ST-segment level during ischemia and the ST-segment level during reperfusion. The data were analyzed by one-way ANOVA.

Measurement of MDA

Data Analysis

The data were analyzed by one-way ANOVA. The results are presented as mean ± SD. A p-value of < 0.05 was considered statistically significant.

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