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EFFECT OF CURCUMIN ON LECTIN-LIKE OXIDISED LOW DENSITY LIPOPROTEIN RECEPTOR 1 (LOX-1) MRNA EXPRESSION IN CARDIOMYOCYTES INDUCED BY ANGIOTENSIN II

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Objective We cultured neonatal SD rat cardiomyocytes, treated then with solvents or drug (curcumin), anti-LOX-1 antibody, and then stimulated with AngII. We observed the difference of the mRNA expression of Lectin-like oxidised low density lipoprotein receptor 1 (LOX-1) among the four groups. We aim to establish the effects of curcumin on the mRNA expression of LOX-1 in cardiomyocytes cultured cells, and further investigate this effect of protecting and delaying some myocardial diseases.

Methods The experiment was accomplished between 2010/3–2010/9 in the animal operating room of Anhui Medical University, and the center laboratory of the First Affiliated Hospital of Anhui Medical University. (1) Neonatal SD rat 6–10 (1–2 days), the hearts were extracted, neonatal rat heart tissue was digested 4 to 5 times, and then cultured with DMEM/F12 including 10% BSA. (2) The cardiomyocytes were cultured

for 48 h in DMEM/F12 including 10% BSA, and then changed the culture medium to DMEM/F12 without BSA, cultured for 24 h. (3) The cultured cardiomyocytes were divided into four groups: group 1, the negative control group; group 2, the Positive control group (treated with AngII), group 3, the AngII+anti-LOX-1 antibody group, group 4, the AngII+curcumin group. (4) We cultured samples with DMEM/F12 without BSA for 24 h, changed the third group's culture medium to DMEM/F12 including 10 µg/ml anti-LOX-1 antibody and the fourth group's culture medium to DMEM/F12 including 5 µmol/l curcumin for 3 h. Then changed the second, third, fourth group's culture medium to DMEM/F12 including 0.1 µmol/l AngII, cultured for another 24 h. (5) We collected the total RNA of the cultured cardiomyocytes with Trizol, used RT-PCR to detect the mRNA expression of LOX-1 in four groups. The results were treated with gel-imaging system.

Results (1) This experiment was repeated for three times, the cultured cardiomyocytes grew well. The survived cardiomyocytes were assessed by 0.4% trypsin, the survival rates between 95 to 97%, 70 to 80% beating cardiomyocytes were observed and the beating frequency of cells was 8 to 70 beats/min. In the area which the cardiomyocytes density was higher, the beating frequency was between 30 to 70 beats/min. (2) LOX-1 mRNA expression induced by angiotensin II was significantly upregulated in comparison with the negative control group ($p < 0.05$). (3) Pretreatment of cells with curcumin reduced the increase of LOX-1 mRNA expression treated with Ang II ($p < 0.05$), and the expression was not significantly different from the cells pretreated with anti-LOX-1 antibody ($p > 0.05$).

Conclusion Curcumin may lead to anti-oxidation and change the ventricular remodeling by down-regulating the mRNA expression of LOX-1 induced by Ang II.