[gw22-e0340]

EFFECT OF WATER-SOLUBLE CHITOSAN ON THE PROLIFERATION OF VASCULAR SMOOTH MUSCLE CELLS

Mingzhao Du, Shumei Li, Yu Fei, Ling KouThe Second Affiliated Hospital Of Jilin University, Jilin, China

10.1136/heartjnl-2011-300867.174

Objective To study the effect of water-soluble chitosan (WSC) on inhibiting proliferation of vascular smooth muscle cells (VSMCs) in order to provide experimental evidence for developing a drug to prevent vascular restenosis.

Methods Weight (150 ± 10) gSD rats (SPF), conventionally bred two days before experiment. Then the rats were sacrificed, their thoracoabdominal aorta was separated, extracted, the VSMCs were culture. Passage cells were obtained and purified. Cells were obtained within six generations and divided into control group and experimental group. We added different concentrations (1, 10, 100 and 1 000 $\mu\text{g/ml}$) of WSC into experimental group and respectively acted for 24, 48 and 72 hours. We adopted MTT chromatometry methods to test the effect of WSC on the proliferation of VSMs. During the experiments, we also tested the solubility of WSC, moisture content, deacelation degree and the relative molecular weight.

Result The results showed that WSC solubility was 125, water content was 13.19%, degree of deacetylation was 54.73%, weight-average relative molecular weight was 1.17×10^5 . MTT test D (492) results showed that: Act 24 h: control group (1.55 ± 0.016); 1 $\mu\text{g/ml}$ WSC group (1.361 ± 0.075); 10 $\mu\text{g/ml}$ WSC group (1.352 ± 0.016); 100 $\mu\text{g/ml}$ WSC group (1.224 ± 0.062); 1000 $\mu\text{g/ml}$ WSC group (1.203 ± 0.054). The results indicated that the inhibitory effect of WSC on cells was increased at 24 h when the concentration was increasing. When the concentration was more than 10 $\mu\text{g/ml}$, the inhibitory effect was significant differences comparing with the control group ($p<0.05$). Act 48 h: control group (1.812 ± 0.001); 1 $\mu\text{g/ml}$ WSC group (1.72 ± 0.013); 10 $\mu\text{g/ml}$ WSC group (1.673 ± 0.022); 100 $\mu\text{g/ml}$ WSC group (1.627 ± 0.007); 1000 $\mu\text{g/ml}$ WSC group (1.622 ± 0.028). The results indicated that the inhibitory effect was dependent on concentration at 48 h. When the concentration was more than 100 $\mu\text{g/ml}$, the effect became very significant differences comparing with the control group ($p<0.01$). Act 72 h: control group (1.63 ± 0.096); 1 $\mu\text{g/ml}$ WSC group (1.587 ± 0.079); 10 $\mu\text{g/ml}$ WSC group (1.546 ± 0.051); 100 $\mu\text{g/ml}$ WSC group (1.509 ± 0.06); 1000 $\mu\text{g/ml}$ WSC group (1.574 ± 0.078). The results showed the cell proliferation to be reduced and there were no significant differences in growth and changes of cells at 72 h. ($p>0.05$).

Conclusions WSC possessed good water-soluble characteristics. WSC can inhibit the proliferation of vascular smooth muscle cells to prevent restenosis under certain conditions. Thus it can be further developed into an efficient treatment and low adverse reaction drug for restenosis.