Berberine Prevents Atherosclerosis In Apolipoprotein E Knock Out Mice

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OBJECTIVES Coptis chinensis, a Chinese herbal medicine, has been widely used in traditional Chinese medicine for a long time. Berberine, the main alkaloid of Coptis chinensis, has been shown to possess extensive cardiovascular pharmacological activities. In present study, we examined the effects of Berberine on aortic atherosclerosis in Apolipoprotein E gene knockout mice (ApoE−/−) and explored the potential underlying mechanisms.

METHODS 30 ApoE−/− mice, fed a high fat diet from 6 weeks of age, were randomized into three groups (n=10): model group (ApoE−/−), Berberine group (ApoE−/−/Berberine group) and Simvastatin group (ApoE−/−/Simvastatin group). 10 6-week-old C57BL/6 were treated as the control group, fed a basic diet. After 36 weeks, we sacrificed the mice for various measurements with ELISA, Western blot and Real-time PCR.

RESULTS The results showed that treatment with Berberine significantly reduced blood lipid. Berberine has the effect of anti-proliferation of Smooth Muscle Cells. It could reduce the level of Hs-CRP, IL-6 and significantly reduced blood lipid. Berberine has the effect of anti-proliferation and anti-inflammation. Concentrations of TNF-α and CCL18 in the plasma. And it could reduce protein and mRNA expression of NF-κB and MMP-9 in aorta. There is no significant difference between the Berberine and Simvastatin group.

CONCLUSIONS Berberine has the effect of anti-atherosclerosis and anti-inflammation in ApoE−/− mice. Our data have provided some experimental evidences to use Berberine in prevention and cure of atherosclerosis.

GW26-e5324 Study on Cross-immunization Protection of Coxsackievirus B3 gene vaccine
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OBJECTIVES Explore the (resulting in myocarditis) cross-protective immunity coxsackievirus B3 gene vaccine for other types of Coxsackie virus infection.

METHODS Using molecular biological method, Competence bacteria were produced and transformed by pcDNA3/CVB3VP1 recombinant plasmid. The recombinant plasmids were extracted and identified by restriction enzyme test, PCR and sequence; the accredited gene vaccine fragments were Proliferated abundantly and BALB/c mice were immunized then. After 4 weeks and 6 weeks, immunization serum was acquired. CVB1, CVB3, CVB3m and CVB5 were Proliferated and titrated by virological experimental method; cross-immunization protection were observed by Neutralization test.

RESULTS After pcDNA3/CVB3VP1 gene vaccine were identified, it was shown that the aimed CVB3VP1 fragment were conjuncted with plasmid pcDNA3; results of neutralization tests indicate that pathological changes of Hela cells infected by CVB1, CVB3, CVB3m and CVB5 were attenuated due to adding serum from mice bodies inoculated with coxsackievirus B3. Moreover attenuating degree of pathological changes of Hela cells was different which were infected by different types of viruses.

CONCLUSIONS Coxsackievirus B3 gene vaccine plays a protective role in infection of CVB1, CVB3, CVB3m and CVB5; furthermore the protection is different in infection of CVB1, CVB3, CVB3m and CVB5.

GW26-e0207 Monocyte activation in atherosclerosis
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OBJECTIVES Monocyte recruitment in arterial wall is an early event in atherogenesis. The classically activated macrophages (M1 subpopulation) and alternative-activated macrophage (M2 subpopulation) can be generated from monocytes. To identify the origin of activated monocytes in atherogenesis and also the potential of their effects, we attempted to evaluate the susceptibility to M1 and M2 activation of monocytes circulating in the blood of healthy individuals and patients with asymptomatic carotid atherosclerosis.

METHODS Cross-sectional clinical study was performed, which involved healthy donors, apparently healthy subjects with a predisposition to atherosclerosis, and patients with subclinical atherosclerosis. Study participants did not have clinical manifestations of atherosclerotic disease (ischemic heart disease, myocardial infarction, stroke history), did not take cardiotropic and lipid-lowering drugs, and did not have concurrent chronic diseases that may affect the results of the study (diabetes mellitus, oncopathology, collagenoses, asthma, endocrine diseases). Quantitative diagnostics of pro-atherosclerotic and atherosclerotic states was performed by high-resolution ultrasonography of carotid arteries followed by intima-media thickness (IMT) of common carotid arteries. To identify individual profiles of cell activation, monocytes were isolated from whole blood using magnetic CD14-positive separation. Functional analysis of monocyte activity included the measurement of concentrations of cytokines produced by cells under standardized conditions in response to pro-inflammatory stimulation with interferon-gamma or anti-inflammatory stimulation with interleukin-4. Secretion of TNF-α was considered to be a marker of pro-inflammatory activity of macrophages, while secretion of CCL18 chemokine as a marker of anti-inflammatory activity. Concentrations of TNF-α and CCL18 in the culture medium were determined by ELISA on day 1 or 6 after cell isolation, respectively.

RESULTS Surprisingly, we found a dramatic individual difference in susceptibility to activation between monocytes isolated from the blood of different subjects, regardless of the presence or absence of atherosclerosis. Monocytes early atrophy; their cholesterol level and monocyte susceptibility to activation, we used atherogenic modified LDL from patients with documented atherosclerosis to induce cholesterol accumulation in cultured cells. Although modified LDL induced cholesterol accumulation in cultured monocyte-derived cells, neither cytokine secretion nor cytokine genes expression were affected.

CONCLUSIONS We believe these observations are very important because the identified differences may explain the individual features of the immune response in different subjects.

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GW26-e0466 Endothelial cells dysfunction induced by CD137-CD137L/Cyclophilin A activation through oxidative stress via NF-κappaB pathways
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OBJECTIVES Endothelial cell (EC) dysfunction is a key event in the onset and progression of atherosclerosis. Our previous studies showed