VSMCs, accompanied by reduced expression of MCP-1 and IL-6 both in mRNA and protein. CHIP assay indicated that the underlying mechanisms were relevant to the restoration of H3K36me3 levels at the promoters of MCP-1 and IL-6, and then the suppressed expression of MCP-1 and IL-6.

CONCLUSIONS The JMD2A inhibition significantly attenuated neointimal formation in balloon injured diabetic rats via the suppression of VSMCs proliferation, migration, and inflammation.

GW26-e1560 Sodium tanshinone A sulfonate alleviates cardiomyocytes injury induced by radiation in vitro
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OBJECTIVES The present study determines whether STS could provide cardioprotective effect on radiation-induced cardiomyopathy and investigates the potential molecular mechanisms against radiation-induced cardiomyocytes apoptosis in vitro.

METHODS In vitro experiment, H9c2 cells were divided into seven groups, 4Gy X-rays group, 4Gy X-rays group, 6Gy X-rays group, 8Gy X-rays group, STS + 4Gy X-rays group, STS + 6Gy X-rays group, STS + 8Gy X-rays group. H9c2 cells pretreated with or without STS (10 μg/mL) for 24 hour were exposed to X-ray radiation. The cardioprotective effects of STS were evaluated by applying MTT, flow-cytometric analysis, Hoechst 33258 nucleus staining, and western blot.

RESULTS Following mere 4Gy,6Gy and 8Gy exposure of H9c2 to irradiation, significant reductions were found in cell survival at 24h post-irradiation respectively(15.6%,34.9%,48.5%) and radiation-induced apoptosis was confirmed by Hoechst 33258 nuclear staining. While STS treatment resulted in a significant increase in cell survival, restoring cell survival to 95.6±0.2% (4Gy), 86.7±1.4% (6Gy), and 79.1±4.2% (8Gy). Hoechst 33258 nuclear staining observations demonstrated the same protective effect of STS on radiation-induced myocardial injury. After 24h of irradiation, the apoptosis index was markedly increased in the mere X-rays irradiation groups compared with that of control group (P < 0.04), whereas the apoptosis index was significantly decreased by STS compared to that in the mere X-rays irradiation groups (P < 0.032). Western blot analysis also showed that STS increased P-Akt (P < 0.023) and P-ERK1/2 (P < 0.014) in H9c2 cells, and these changes were also accompanied by the increase of Bcl-2/Bax ratio (P < 0.02) and the decrease of active caspase-3 expression (P < 0.03).

CONCLUSIONS Radiation could aggravate H9c2 cells injury and STS may attenuate this damage by P13K/Akt and ERK1/2 signaling pathways. This effect may be related to its inhibition of apoptosis of H9c2 cells. These results suggest that STS shows a good prospect in clinical prevention and the treatment of radiation-induced heart disease.

GW26-e1826 Effects of A prescription of Jia-Shen (PJS) on Angiotensin-II Induced Cardiac Fibroblast Proliferation
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OBJECTIVES This study was aimed to determine the mechanisms for PJS attenuating Ang II-induced cardiac fibroblast proliferation.

METHODS We induced cardiac fibroblast proliferation by the use of Ang II in an in vitro model cardiac fibroblast culture. Cardiac Fibroblasts were obtained from the hearts of neonatal (1-3 days old) Sprague-Dawley rats and were cultured in serum-free medium for 24 hr, then treated with the serum derived from the rats treated with PJS for 3 days with or without Ang II (10 μmol/L) treatment. After a additional 24 hr of culture, cells were harvested for analysis of cell proliferation, collagen and elastin production with the use of MTT, and protein expression.

RESULTS Cardiac fibroblast proliferation measured by MTT method was increased in Ang II treated group compared to the control group (P < 0.005), the levels of collagen were increased in Ang II treated group compared to the control group (P < 0.005). The levels of collagen were increased in Ang II treated group compared to the control group (P < 0.005). The results were associated with the decreased expression of p-Smad2/3 mRNA and protein compared to Ang II treated group (P < 0.05) although it had no effect on a-SMA protein expression (P > 0.05) compared to Ang II treated group.

CONCLUSIONS The presence study determined that the Jia Shen plus potassium supplement increased the increased levels of collagen and cell proliferation, and the expression of p-Smad2 and p-Smad3 mRNA and P-Smad3 protein compared to Ang II treated group (P < 0.05) although it had no effect on a-SMA protein expression (P > 0.05) compared to Ang II treated group. The present study was designed to explore whether PJS could induce vascular endothelial cell proliferation and the underlying mechanism.

GW26-e0774 Influence of Gene Expression in Kidney of Dahl Rat under Sodium or Potassium Interventions
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OBJECTIVES A large number of evidences in population trials and animal experiments have revealed that the renal dysmotional metabolism of sodium or potassium play a key role in formation of salt sensitivity. Our previous studies have shown that potassium supplement could have a protective effect in both blood pressure and kidney, especially in persons with salt sensitivity, however the mechanisms remain unresolved. The aim was to investigate alteration of gene in kidney of Dahl rat and preliminarily explore the protective mechanism of potassium on blood pressure, which would shed some new light in future.

METHODS Male Dahl sensitive rats and 13BN-SS rats were randomly divided into normal salt group, high salt group and high salt plus potassium supplement group respectively; Illumina RatRef-12 Expression BeadChip were used for screening the renal different gene expression. Western blot was performed to identify the expression of SGK1 and Mcoln3 proteins.

RESULTS Microarray scanning had shown that 594 different gene were obtained between high salt group and high salt plus potassium supplement group in Dahl salt sensitive rats, including 292 upregulated genes and 302 downregulated genes; there were 429 upregulated genes and 165 downregulated genes between Dahl salt sensitive rats and 13BN-SS rat in high salt group, totally 908 different genes; GO functional analysis found that these genes mainly take part in the process of ion transport, energy metabolism, fatty acid metabolism, oxidative stress, apoptosis and so on. First related to sodium or potassium metabolism genes Mcoln3, SGK1, Slc34a2, Atp1a4 and Trpv6 was validated to increase in Dahl salt sensitive rats and 13BN-SS rat in high salt group, totally 908 different genes; GO functional analysis found that these genes mainly take part in the process of ion transport, energy metabolism, fatty acid metabolism, oxidative stress, apoptosis and so on. First related to sodium or potassium metabolism genes Mcoln3, SGK1, Slc34a2, Atp1a4 and Trpv6 was validated to increase in Dahl salt sensitive rats and 13BN-SS rat in high salt group.

CONCLUSIONS Dietary high salt could increase the expression of SGK1 in Dahl salt sensitive rats, in contrast, potassium supplement could reverse this phenomenon; no difference was observed among normal salt group, high salt group and high salt plus potassium supplement group in 13BN-SS rat; the expression of Mcoln3 was higher in Dahl salt sensitive rats than 13BN-SS rat, moreover, potassium supplement could upregulate the expression of Mcoln3 in Dahl salt sensitive rats and 13BN-SS rat.

GW26-e12382 Cadmium induced NLRP3-mediated pyroptosis in Human umbilical vein endothelial cells
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OBJECTIVES The present study was designed to explore whether cadmium could induce vascular endothelial cell pyroptosis and the underlying mechanisms.
RESULTS

Cell viability was significantly decreased after treated with CdCl₂ in a concentration-dependent manner (control: 100 ± 4.11%, 20 μM: 99.14 ± 0.87%, 40 μM: 26.22 ± 0.50% respectively). The cell death induced by CdCl₂ appeared to involve pyroptosis based on our results from the increased of LDH release (1.97 ± 0.06 fold of change to control) and active Casp1/SYTOX double-positive (10.67 ± 0.71 fold of change to control) (Pyroptosis was defined as the presence of both active Casp1 and SYTOX positivity). As the makers of NLRP3 inflammasome activation, the expression of caspase-1 (3.17 ± 0.19 fold of change to control) and IL-1β (1.60 ± 0.16 fold of change to control) are significantly up-regulated after incubated with CdCl₂. Moreover, transfection of NLRP3 siRNA was highly efficient in reducing the expression of caspase-1 and IL-1β (P<0.05).

CONCLUSIONS

These results indicate that cadmium (CdCl₂) could induce vascular endothelial cell pyroptosis and the NLRP3 inflammasome activation is associated with HUVECs pyroptosis induced by cadmium.

GW26-e2934

The effect of Huoxue Qiangyang recipe on the myocardial endoplasmic reticulum stress signaling pathway of obesity hypertensive rats

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OBJECTIVES

To investigate whether and how the Ang II induced endoplasmic reticulum stress (ERS) and then the cardiomyocyte apoptosis involves in myocardial remodelling of obesity hypertensive rat models, then to investigate the huoxue qiangyang(HXQY) recipe’s effects on these changes.

METHODS

72 five-week-old spontaneously hypertensive male rats (SHR) were selected as objects, and randomly divided into two groups according to the random number table(per ration of 2:1), that was control diet group (C group) and high fat diet group; 18 age-matched WKY rats were selected as the normal control group (W group). High fat diet group were fed 10 weeks, then 27 SHR were selected as obesity prone rats, while others were obesity resistant rats; obesity prone rats were randomly divided into three groups: obesity model group (M group), M group plus homocysteine group (MZ group) and obesity control group (MC group). The blood pressure of tail artery of 9 15-week-old C group, W group, M group and W group rats were recorded, the blood and heart samples were obtained. The rest rats of C group, W group, MC group were gavaged with 15ml Kg⁻¹ d⁻¹ HXQY recipe. The blood pressure of tail artery were recorded twice a week. 8 weeks later, the blood and heart samples were obtained. All blood samples’ fasting glucose, insulin, lipids and angiotensin II were tested. These hearts’ Ang II levels were tested and myocardial cell apoptosis were tested with tunel kit. The markers in myocardial endoplasmic reticulum stress signaling pathway were tested via RT-PCR and Western Blot method.

RESULTS

Before the treatment, the C, M groups’ HOMA-IR index, Ang II and lipids were higher than the W group (P<0.01), and the M groups were the highest (P<0.05). After treatment, MC Group’s those indicators increased (P<0.01), but MZ groups didn’t change significantly (P>0.05). There was no significantly difference between M and C groups’ blood pressure (P>0.05), but both of these two groups’ blood pressure higher than the W group (P<0.01). Rats treated with HXQY recipe experienced a reduction in blood pressure. Myocardiac Ang II level in W group was much higher than the C and W group of the same age (P<0.05), and HXQY recipe lowered the level of Ang II significantly (P<0.05). We found that cardiomyocyte apoptosis had enhanced in the MC group, much higher than the M, C, W groups (P<0.05). And HXQY recipe inhibited the progress of this (P<0.05). Apart from that, W group had the lowest GRP78, CHOP and Caspase12 mRNA and GRP78, CHOP and Caspase12 protein expression (P<0.01), however MC group had the highest ones (P<0.01). These genes’ mRNA and protein level notable decreased after HXQY recipe‘treatment (P<0.01).

CONCLUSIONS

We propose that obesity hypertension regulate structural remodeling of the heart. HXQY recipe can improve metabolic disturbance, lower the blood pressure and prevent the progress of obesity hypertensive heart remodeling by depression of the Ang II induced ERS and cardiac apoptosis.

GW26-e4468

Effect of Aconine on the expression of Caveolin-1 and eNOS in EAHy926 cell injured by Homocysteine

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OBJECTIVES

To detect the effect of aconine on the expression of Caveolin-1 and eNOS in EAHy926 cell injured by homocysteine.

METHODS

Model of EAHy926 cell injured by homocysteine was made, the protection on the EAHy926 cell of aconine with different dosages and different durations were observed. The effect of aconine on the expression of protein of Caveolin-1 and eNOS in EAHy926 cell were observed by Western-blot, and effect of aconine on the expression of mRNA of Caveolin-1 and eNOS in EAHy926 cell were observed by fluorescent quantitation PCR.

RESULTS

After Model of EAHy926 cell injured by homocysteine was made, we found that cultured with 0.5, 1.0, 2.0, 4.0, 8.0 μmol/L homocysteine, cells grew less than cultured with normal culture medium, with the increase of homocysteine concentration, the number of attached cell grew downwards obviously, as culturing with homocysteine 4.0 μmol/L for 24h did lower damage to cells and could induce effective cell injury, it was made to be the model of injury. To observe the effect of aconine on EAHy926 cell injured by homocysteine, well growing EAHy926 cells were cultured in culture plate. 24h later, cells were cultured with DMEM medium containing 2% fetal calf serum for 8 hours to make cells hungry, then cultured with medium containing aconine 0.05, 0.10, 0.20 mg/ml respectively for 30 minutes, then cultured in DMEM medium containing aconine 0.20 mg/ml plus homocysteine 4.0 μmol/L group grow best. Detected by Western-blot, it was found that, compared with control group, attached cells in aconine groups grew better, and attached cells in aconine 0.20 mg/ml plus homocysteine 4.0 μmol/L group grew best. Detected by fluorescent quantitation, it was found that, compared with control group, attached cells in aconine groups grew better, and attached cells in aconine 0.20 mg/ml plus homocysteine 4.0 μmol/L group it was the most obvious (p<0.05). Detected by fluorescent quantitation, it was found that, compared with control group, there was no obvious change of protein of Caveolin-1 and eNOS in aconine 0.20 mg/ml group, but in homocysteine 4.0 μmol/L medol group, expression of Caveolin-1 protein enhanced obviously, expression of eNOS protein weakened oberviously, and in aconine groups, expression of Caveolin-1 protein weakened, and expression of eNOS protein enhanced, and in aconine 0.20 mg/ml plus homocysteine 4.0 μmol/L group it was the most obvious (p<0.05).

CONCLUSIONS

Homocysteine may injure EAHy926 cell by enhancing the expression of caveolin-1 then suppressing the expression of eNOS, while aconine may protect EAHy926 cell by suppressing the expression of caveolin-1 then enhancing the expression of eNOS.

GW26-e4470

Effect of Aconine on the expression of Sirt-1 and eNOS system in EAHy926 cell injured by Homocysteine

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OBJECTIVES

To detect the effect of aconine on the expression of Sirt-1 and eNOS system in EAHy926 cell injured by homocysteine.

METHODS

Model of EAHy926 cell injured by homocysteine was made, the protection on the EAHy926 cell of aconine with different dosages were observed. The concentration of cell culture fluid was detected by nitrateredactase method, effect of aconine on the expression of protein of Sirt-1 and eNOS in EAHy926 cell were observed by Western-blot, and effect of aconine on the expression of mRNA of Sirt-1 and eNOS in EAHy926 cell were observed by fluorescent quantitation PCR.