GW23-e0744

A NOVEL VWF A3-GPI MODIFIED EPCS TO ENHANCE ITS ADHESION ABILITY TO DAMAGED VESSEL SEGMENT-COLLEGEN

doi:10.1136/heartjnl-2012-302920a.191

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Objectives This study was designed to investigate the relationship between heme oxygenase (HO)/carbon monoxide (CO) system and nitric oxide synthase (NOS)/nitric monoxide (NO) system in diet-induced atherosclerosis.

Methods The rabbits serving as animal models were divided into six groups. The normal control group (n=8) were fed with normal sterile diet while the Cholesterol group (n=8) were fed with 1% cholesterol diet. The other four groups (L-arg group, L-NAME group, Hame group and ZnPP group; n=8) were fed with 1% cholesterol diet plus L-arginine (L-arg), NG-Nitro-L-arginine Methyl Ester (L-NAME), hame-L-lysinate and zinc protoporphyrin IX (ZnPP-IX) respectively. The treatment lasted for 10 weeks.

Results Aortic plaques area in chol group was $40.2 \pm 8.9\%$. The decrease of aortic NO production and NOS expression was associated with increase of CO production ($p < 0.01$) and HO-1 activity ($p < 0.01$) in chol group when compared with controls. Aortic plaque areas reduced distinctly ($26.6 \pm 9.2\%$) as well as the up-regulation of aortic CO production ($p < 0.01$) and HO-1 activity ($p < 0.01$) was significant when hame group was compared to chol group. On the other hand, in comparison with controls, NOS expression and NO production in hame group decreased significantly ($p < 0.01$), but no apparent difference was drew between chol group and hame group. When Compared with chol group, aortic cNOS activity and NO production increased obviously and aortic plaques area ($28.1 \pm 7.7\%$) was greatly reduced ($p < 0.01$) in L-arg group. Reversely, HO-1 expression and CO production in L-arg group decreased distinctly when compared with those in control group, but the results in L-arg group were similar to those in chol group. The aortic c-myc and c-fos expressions in both hame group and L-arg group reduced significantly when compared with those in chol group, while they were similar to those in ZnPP group and L-NAME group.

Conclusions Our study demonstrates that HO/CO system can attenuate the development of atherosclerosis through its regulation and compensation to the NOS/NO systems in diet-induced atherosclerosis.