morphological change. There into, the proportions of preautophagosome to the total area of cytoplasm in group III and group IV are remarkably decreased than that of group I, and the difference was significant (p<0.01). The proportions of group II is lower than that of group I, but not significant (p>0.05). The proportions of group IV is lower than that of group III, but there was no obvious difference between two groups (p>0.05).

Conclusion Using atorvastatin, in induction procedure, can inhibit vascular endothelial cells autophagy, which may be related to the role of atorvastatin’s improvement on endothelial function. However, using atorvastatin, prior to the occurrence of induced autophagy, can not quite inhibit the occurrence of autophagy.

### THE STUDY OF DERIVATION FROM BONE MARROW MESENCHYMAL STEM CELLS INTO CARDIOMYOCYTE-LIKE CELLS IN VITRO VIA CARDIOTROPHIN-1

**doi:**10.1136/hrt.2010.208967.35

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**Objective** To investigate the effects of CT-1 on differentiation of induced swine BMSCs in vitro independently or with 5-aza.

**Methods** BMSCs were divided into four groups: blank control; induced with CT-1; induced with 5-aza; induced with 5-aza combined with CT-1. After 4 weeks of induced culturing, the differentiation of cardiomyocyte induced were estimated by cTnT and a-actinin.

**Result** Red fluorescence staining of a-actinin shows: the differentiation rate of myocardial cells of the composite group is greater (29.90±0.64%) than that of group I, and the difference was significantly increased by 10 μM LPC by 21.5% when [Ca²⁺] was high (pCa=7). Intracellular Ca²⁺-dependent augmentation of I_Ca,T by LPC was confirmed not only in neonatal cardiomyocytes but in adult ventricular myocytes from the hypertrophied heart. In this experiment, I_Ca,T was significantly increased by 10 μM LPC by 23.5% when [Ca²⁺], was high (pCa=7), although it was unchanged when [Ca²⁺] was low (pCa=11). (3) LPC exerted no effect on the Ca₉.₁ T-type Ca²⁺ channel current (I_Ca₉.₁) regardless of the [Ca²⁺] condition at a pCa of 7 (solution F) or at a pCa of 11 (solution A). In contrast, LPC upregulated the Ca₉.₂ T-type Ca²⁺ channel current (I_Ca₉.₂), which was much larger at a pCa of 7 than that at a pCa of 11. (4) A specific PKCβ inhibitor Ro−52-0432 completely blocked the effect of LPC on I_Ca₉.₂. However, in the same culture condition, a specific PKCβ inhibitor G6 6976 (20 nM) and a specific PKCβII inhibitor CGP53535 (2 μM) did not modify the effect of LPC on I_Ca₉.₂.

**Conclusion** The present study indicates that intracellular signal PKCα activation by LPC upregulates the cardiac I_Ca,T in physiologic or higher [Ca²⁺] condition may be a novel ischemia-related mechanism, which may accelerate the pathophysiological cardiac autotagration and trigger tachyarrhythmias.

### EFFECTS OF ENALAPRIL AND IRBESARTAN ON AORTA REMODELLING AND ION PUMPS IN RENOVASCULAR HYPERTENSIVE RATS

**doi:**10.1136/hrt.2010.208967.37

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**Objective** To investigate the effects of single-drug or combination therapy of enalapril and irbesartan on aorta remodelling and its mechanisms.

**Methods** Renovascular hypertensive rats (RHD) induced by two-kidney one-clip method were treated with normal saline (model group, n=6), enalapril (10 mg/ (kg d), n=6), irbesartan (50 mg/ (kg d), n=6) and enalapril+irbesartan (5 mg/ (kg d)+25 mg/ (kg d), n=6) for 6 weeks. Six sham-operated rats were used as controls. Aortic morphology and structural changes in the media were observed by HE staining, immunohistochemistry and Masson staining. The content of Angiotensin II (Ang II) was measured by radioimmunoassay. The activities and mRNA levels of Na⁺ pump and Ca²⁺ pump in aortic media were determined by enzyme assay and real-time PCR respectively.

**Results** The media area of aorta and the Ang II content were significantly increased in model group, while the activities and the mRNA levels of Na⁺ pump and Ca²⁺ pump in aortic media were obviously decreased, and Na⁺ pump and Ca²⁺ activities were increased in enalapril group and irbesartan group (p<0.01). The Ang II content was obviously decreased in enalapril group, while increased in irbesartan group (p<0.01). The mRNA levels of sodium pump a₉-subunit and plasma membrane calcium pump isoform 1 (PMCA1) in aorta smooth muscle tissue were significantly increased in enalapril group (p<0.01). The amelioration of blood pressure, Na⁺ pump and Ca²⁺ pump activities, media area and thickness in combination group was significantly better than single-drug intervened group (p<0.01).

**Conclusion** The amelioration of aorta remodelling induced by enalapril and irbesartan may be associated with the increase of Na⁺ pump and Ca²⁺ pump activities. There may be some synergistic effects on ameliorating of Na⁺ pump and Ca²⁺ pump activities and aorta remodelling from combination of the two drugs. The effect of enalapril on Na⁺ pump and Ca²⁺ pump activities may be mediated by increasing their mRNA expression.