

## Joint Event 2019: Antiplatelet agents as a novel therapy of heart failure due to myocardial infarction- Naranjan S Dhalla- University of Manitoba, Canada

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### Abstract

**Background:** Although different antiplatelet agents are used for the prevention of thrombosis and treatment of ischemic heart disease, very little information regarding therapeutic potential of these agents in heart failure is available. **Objectives:** We have investigated the effects of some antiplatelet agents such as sarpogrelate (SAR) and cilostazol (CIL) treatments on cardiac dysfunction, cardiac remodeling and subcellular defects in heart failure due to myocardial infarction.

**Methods:** Heart failure in rats was induced by including the coronary artery for 8 weeks and the drug treatment was started 4 weeks after inducing myocardial infarction.

**Results:** Marked depression in cardiac output and ejection fraction as well as increases in heart rate, left ventricle (LV) thickness and LV volume in the infarcted animals were attenuated by SAR and CIL. Alterations in myofibrillar  $Ca^{2+}$ -ATPase, as well as myosin isozyme contents and gene expression in the failing heart were reduced by SAR and CIL. Likewise, changes in sarcoplasmic reticular  $Ca^{2+}$ -uptake and release activities,  $Ca^{2+}$ -pump and  $Ca^{2+}$ -release protein content as well as their mRNA levels were attenuated by both drug treatments.

**Conclusions:** These results provide evidence that both SAR and CIL delay the progression of heart failure and improve cardiac function by attenuating cardiac remodeling, subcellular defects and abnormalities in cardiac gene expression. It is suggested that antiplatelet agents may prove to be a viable therapy for the treatment of heart failure. (Infrastructure support for this study was provided by the St. Boniface Hospital Foundation)

### Recent Publications

1. Dhalla N S, Takeda N, Rodriguez-Leyva D and Elimban V (2014) Mechanisms of subcellular remodelling in heart failure due to diabetes. *Heart Fail Rev* 19(1):87-99.
2. Dhalla N S, Rangi S, Babick A P, Zieroth S and Elimban V (2012) Cardiac remodeling and subcellular defects in heart failure due to myocardial infarction and aging. *Heart Fail Rev* 17(4-5):671-681.
3. Machackova J, Sanganalmath S K, Elimban V and Dhalla N S (2011)  $\beta$ -adrenergic blockade attenuates cardiac dysfunction and myofibrillar remodeling in congestive heart failure. *J Cell Mol Med* 15(3):545-554.
4. Dhalla N S, Saini-Chohan H K, Rodriguez-Leyva D, Elimban V, Dent M R and Tappia P S (2009) Subcellular remodeling may induce cardiac dysfunction in congestive heart failure. *Cardiovasc Res* 81(3):429-438.

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