Heart, aorta and liver were collected from 10 wk old C57BL/6J mice. Quantitative RT-PCR confirmed high gene expression (Ct<30cycles) for all H₂S synthesising enzymes within liver, while cardiac tissue displayed moderate gene expression of CSE and MPST (Ct<35cycles) and low expression of CBS (Ct>35cycles, n=4). Western blots confirmed the presence of protein within liver and heart homogenates for all enzymes. CSE, CBS and MPST were all localised to the cytosolic component of heart and liver homogenates. Immunohistochemical staining of fixed tissue sections located CSE to vascular smooth muscle in heart and thoracic aorta, while CBS and MPST were found in the vascular endothelium. Cardiomyocytes were immunoreactive for all enzymes.

The murine myocardium has the capacity to regulate local H₂S availability, via at least three separate synthetic pathways, that have differential cellular locations. Future studies will investigate whether synthetic enzyme expression and H₂S availability is regulated following ischaemia and reperfusion.

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CHARACTERISATION OF THE SYNTHETIC ENZYMES OF H₂S IN MURINE MYOCARDIUM

doi:10.1136/heartjnl-2012-303148a.8

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Hydrogen sulphide (H₂S) is a novel endogenously produced gaso-transmitter. H₂S donor compounds protect the heart from ischaemia-reperfusion injury. However the potential for the heart to regulate endogenous H₂S availability to provide cardioprotection is not well characterised. The present study aimed to determine the expression, distribution and sub-cellular localisation of the H₂S synthesising enzymes cystathionine β -synthase (CBS), cystathionine gamma-lyase (CSE) and mercaptopyruvate sulfurtransferase (MPST) in the heart.