Pharmaceut Reg Affairs 2012, 1:4
http://dx.doi.org/10.4172/2167-7689.S1.008

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference and Exhibition on
Pharmaceutical Regulatory Affairs

November 23-24, 2012 Hyderabad International Convention Centre, India

SGLT-1: A Novel target for drug development in cardiomyopathy and heart failure

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Target-based drug discovery has become the prevailing paradigm used by pharmaceutical and biotechnology companies. This approach is attractive as it holds the promise of identifying newer and more-efficacious compounds with fewer undesirable side effects. Target identification and validation technologies form a critical foundation for modern drug discovery. These approaches provide a rich source of intellectual property and can be valuable competitive differentiators for companies seeking proprietary positions for drugs that act through novel mechanisms. Inhibiting sodium–glucose co-transporters (SGLTs), which have a key role in the reabsorption of glucose in kidney, has been proposed as a novel therapeutic strategy for diabetes. The development of inhibitors targeted against SGLTs grew out of experiments with the compound phlorizin, which was first isolated in the 1800s and was found to improve blood glucose levels in laboratory animals. While SGLT2 has been established as a potential target for diabetes, SGLT1 has not shown much effectiveness against diabetes. However, our recent data indicated that SGLT1 highly expressed in heart and plays an important role in cardiomyopathy. In the mammalian heart, glucose transport is believed to be mediated mainly by two members of the GLUT family, GLUT1 and GLUT4. Whereas GLUT1 is regarded as a basal glucose transporter, GLUT4 is upregulated in response to insulin and mechanical work. In addition to the GLUT family, members of the sodium/glucose cotransporter (SGLT1) mediates glucose uptake in normal and disease heart. Although SGLT1 is highly expressed in the heart, its cardiac function has been investigated recently. I will discuss my journey to find a novel target, SGLT1, for the opportunity to develop drugs against cardiomyopathies and heart failure.

Biography

Sanjay K Banerjee has completed his Ph.D in 2003 from Division of Pharmacology, All India Institute of Medical Sciences, New Delhi and postdoctoral studies from SUNY Upstate Medical University, Syracuse, USA (2003-2005) and University of Pittsburgh, Pittsburgh, USA (2005-2009). He is a Scientist and Ramalingaswami Fellow (DBT, Govt. of India), in the Division of Pharmacology, Indian Institute of Chemical Technology, Hyderabad. He is also a guest faculty in NIPER, Hyderabad. He has published more than 30 papers in reputed journals. He is member of D&CVD, a study group of European Association for the Study of Diabetes (EASD).

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