BMC Pharmacology

Poster presentation

The use of PDE5 inhibitors in the treatment of benign prostate hyperplasia and lower urinary tract symptoms: preclinical evidences

Peter Sandner*, Hanna Tinel, Beatrix Stelte-Ludwig, Erwin Bischoff and Joachim Huetter

Address: Bayer HealthCare AG – Institute of Product-Related Research, D-42096 Wuppertal, Germany

Email: Peter Sandner* - peter.sandner@bayerhealthcare.com

* Corresponding author

from 3rd International Conference on cGMP Generators, Effectors and Therapeutic Implications
Dresden, Germany. 15–17 June 2007

Published: 25 July 2007

BMC Pharmacology 2007, **7**(Suppl 1):P48 doi:10.1186/1471-2210-7-S1-P48

This abstract is available from: http://www.biomedcentral.com/1471-2210/7/S1/P48

Introduction

Sildenafil (Viagra®), vardenafil (Levitra®) and tadalafil (Cialis®) are potent and selective PDE5 Inhibitors which are used for the treatment of erectile dysfunction (ED). The aim of this study was to evaluate the potential of PDE5 inhibition for the treatment of benign prostate hyperplasia (BPH) and lower urinary tract symptoms (LUTS).

Material-methods

The mRNA expression of PDE5 was determined in rat tissues of the lower urinary tract. To test the functional relevance of the PDE5 expression, sildenafil, vardenafil, and tadalafil were tested on pre-contracted isolated rat bladder, prostate and urethra strips. The *in vivo* efficacy was tested in a partial bladder outlet obstruction (BOO) model after acute and chronic treatment.

Results

PDE5 mRNA expression was found highest in the bladder, followed by the urethra and prostate. Vardenafil dose-dependently relaxed the bladder strip at 1 μM and 10 μM by 30% and 75%, respectively. In the urethra 1 μM vardenafil caused a 60% relaxation and in the prostate 1 and 10 μM vardenafil caused a relaxation by 51% and 97% respectively. The rank order of potency in the investigated organ bath assays was vardenafil > sildenafil > tadalafil. In the BOO model, a dose-dependent reduction of the NVC by 29% and 57% was observed after bolus i.v. administration of 3 mg/kg and 10 mg/kg vardenafil respectively. Sildenafil was effective in the same range, however tadalafil had no significant effect. In a 5 week chronic treatment study 10 mg/kg/d vardenafil showed significant reduction of NVCs in BOO of 47%.

Summary and conclusion

Our experiments showed that PDE5 is expressed in lower urinary tract tissues, that PDE5 inhibitors induced significant relaxation of these tissues and reduced the irritative symptoms of BPH/LUTS *in vivo*. Therefore, PDE5 inhibitors might be an effective treatment option of BPH/LUTS.