Adaptation of Human (Pro)renin Receptor for Drug Screening

Published date: April 22, 2011

Technology description

Introduction

The recent discovery of (pro)renin receptor, PRR, may have significant implications for intracellular signaling. Moreover, animal studies of PRR have shown that its gene knockout results in lifelessness. Thus, an understanding of PRR could lead to one or more valuable therapies. PRR is also involved in the regulation of blood pressure at a "localized" level. Renin bound to PRR appears to be more active than the free enzyme, and prorenin bound to PRR is also activated. The ability to effect changes in PRR could result in a new, fourth approach to anti-hypertensive therapy.

Description of Technology

Michigan State University's technology has demonstrated the formation of the prorenin/PRR complex in vitro and that recombinant human PRR can activate prorenin. The invention includes PRR's 3D structure for SAR analysis, its functions, and the modification of PRR for use in high-throughput screening. Researchers have demonstrated the formation of a prorenin/PRR complex in vitro and that the recombinant human PRR can activate prorenin. Depending on the cell type, ELISA array assays can be set up to determine if prorenin is activated and how intracellular signaling is elicited by PPR. Compounds can then be screened to see if prorenin activation or intracellular signaling is blocked. Versatile implementations would allow the assay system to be optimized for the most in vivo-like response.

Application area

Pharmaceutical research in novel intracellular signaling

Anti-hypertensive therapeutics

Advantages

There are several treatments that reduce systemic blood pressure. However, tissue damage continues even after successful lowering of blood pressure with contemporary therapeutics. Recent research has strongly suggested that local, or "internal," blood pressure control in the vasculature and tissues is as

important as the control of systemic blood pressure. Currently, there is no commercial treatment for localized blood pressure. This invention could facilitate discovery of the following:
Diverse pathways critical to sustaining life based on intracellular signaling via PPR.
Ligands for anti-hypertensive therapeutics for a new BP regulatory system based on PRR functionality in targeted tissues.

Institution

Michigan State University

Inventors

R. Michael Garavito
Professor
Biochemistry & Molecular Biology
Dexin Sui
Research Technician
Biochemistry & Molecular Biology
Yi Zheng
Graduate Research Assistant
Biochemistry & Molecular Biology

叶先生

电 话：021-65679356

手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com