Australian National University

PUBLIC LECTURE

Oestrogens as BK channel activators

Thursday 11 April 2013, 1pm

Dr Marcus Allen, Reader in Pharmacology, University of Brighton

Slatyer Seminar Room, R.N. Robertson Building (Bldg. 46), Linnaeus Way, ANU

Oestrogens, such as 17β-oestradiol, have a range of rapid non-genomic actions and can interact directly with membrane receptors and channels. In particular, oestrogens can activate BK channels found within smooth muscle. We hypothesis that oestrogens bind at the external interface between the α and β_1 subunits of the BK channel rather than at an intracellular regulatory site. Using isolated rat aortic rings, patch clamp studies in HEK 293 cells expressing the *hSlo* α with or without *hSlo* β_1, and single channel recordings in planar lipid bilayers, we studied the effects of novel oestrogens on BK channels. Some of the derivatives incorporated a quaternary ammonium side chain making them membrane impermeable.

Our investigations suggest that the binding site for oestrogens resides between the extracellular N terminal of the α subunit and the extracellular loop between TM1 and 2 of the β_1 subunit; in addition, an antioxidant mechanism to BK activation seems unlikely and planar lipid bilayer work suggests that two or more β_1 subunits are required for oestrogens to activate BK channels.

Biography of Marus Allen

I graduated in pharmacy at the University of London and undertook research into novel irreversible inhibitors of the high affinity choline transporter at UCL. Latter I taught pharmacology at the University of Sunderland, and in 1984 I moved to the school of environmental and occupational medicine at the University of Aberdeen where I undertook research into the patho-physiological effects of hyperbaric oxygen. From 1988-90 I practised as a clinical pharmacist at the Brighton and Sussex University Hospital Trust (BSUHT). In 1990 I secured a lectureship in pharmacology and Brighton University and have since undertaken research into ion modulators.

Presented by

Research School of Biology

ANU College of Medicine, Biology & Environment

Contact details

E rowena.martin@anu.edu.au T 02 612 50313

This lecture is free and open to the public

RSB Seminar information:
biology.anu.edu.au/News/Events.php

CRICOS# 00120C