Health & Medicine Week

July 26, 2010

PROTEIN KINASE C;
New protein kinase c research from **Florida State University,** Medical Department discussed

SECTION: EXPANDED REPORTING; Pg. 1676

LENGTH: 527 words

According to recent research from the United States, "Studies have shown that labor occurs primarily in the night/morning hours. Recently, we identified the human myometrium as a target for melatonin (MEL), the neuroendocrine output signal coding for circadian night."

"The purpose of this study was to determine the signaling pathway underlying the effects of MEL on contractility and the contractile machinery in immortalized human myometrial cells. To ascertain the signaling pathway of MEL leading to its effects on myometrial contractility in vitro, we performed gel retraction assays with cells exposed to iodo-MEL (I-MEL) with or without oxytocin and the Rho kinase inhibitor Y27632. I-MEL effects on inositol trisphosphate (IP3)/diacylglycerol (DAG)/protein kinase C (PKC) signaling were also investigated. Additionally, we assayed for caldesmon phosphorylation and ERK1/2 activation. I-MEL was found to activate PKC alpha via the phospholipase C/IP3/DAG signaling pathway, which was confirmed by PKC enzyme assay. I-MEL did not affect myosin light chain phosphatase activity, and its effects on contractility were insensitive to Rho kinase inhibition. I-MEL did increase phosphorylation of ERK1/2 and caldesmon, which was inhibited by the MAPK kinase inhibitor PD98059 or the PKC inhibitor C1. MEL sensitizes myometrial cells to subsequent procontractile signals in vitro through activation of the phospholipase C/IP3/DAG signaling pathway, resulting in specific activation of PKC alpha and ERK1/2, thereby phosphorylating caldesmon, which increases actin availability for myosin binding and cross-bridging," wrote J.T. Sharkey and colleagues, **Florida State University**, Medical Department (see also Protein Kinase C).

The researchers concluded: "In vivo, this sensitization would provide a mechanism for the increased nocturnal uterine contractility and labor that has been observed in late-term human pregnancy. (J Clin Endocrinol Metab 95: 2902-2908, 2010)."

Sharkey and colleagues published their study in the Journal of Clinical Endocrinology & Metabolism (Melatonin Sensitizes Human Myometrial Cells to Oxytocin in a Protein Kinase C alpha/Extracellular-Signal Regulated Kinase-Dependent Manner. Journal of Clinical Endocrinology & Metabolism, 2010;95(6):2902-2908).

For additional information, contact J. Olcese, **Florida State University**, College Medical, Dept. of Biomedical Science, 1115 W Call St., Tallahassee, FL 32306, USA.

Publisher contact information for the Journal of Clinical Endocrinology & Metabolism is: Endocrine Society, 8401 Connecticut Avenue, Suite 900, Chevy Chase, MD 20815-5817, USA.

Keywords: City:Tallahassee, State:FL, Country:United States, Carboxylic Ester Hydrolases, Enzymes and Coenzymes, Metabolism, Oxytocin, Peptide Hormones, Peptides, Phospholipases, Phosphoric Diester Hydrolases, Phosphotransferases (Alcohol Group Acceptor), Posterior Pituitary Hormones, Protein Kinase C-alpha, Protein Kinases, Protein-Serine-Threonine Kinases, Proteins, Proteomics, Transferases This article was prepared by Health & Medicine Week editors from staff and other reports.

SUBJECT: ENZYMES (92%); HORMONES SUBSTITUTES & ANTAGONISTS (91%); EXPERIMENTATION & RESEARCH (91%); AMINO ACIDS PEPTIDES & PROTEINS (91%); PROTEIN BASED DRUGS (90%); PROTEOMICS (90%); TARGETED DRUG DELIVERY (90%); ENZYME INHIBITORS (90%); BIOTECHNOLOGY & GENETIC SCIENCE (89%); BIOCHEMISTRY (89%); RESEARCH (89%); INVESTIGATIONS (78%); BIOLOGICAL FACTORS (73%); PUBLISHING (66%) City:Tallahassee; State:FL; Country:United States; Carboxylic Ester Hydrolases; Enzymes and Coenzymes; Metabolism; Oxytocin; Peptide Hormones; Peptides; Phospholipases; Phosphoric Diester Hydrolases; Phosphotransferases (Alcohol Group Acceptor); Posterior Pituitary Hormones; Protein Kinase C-alpha; Protein Kinases; Protein-Serine-Threonine Kinases; Proteins; Proteomics

ORGANIZATION: FLORIDA STATE UNIVERSITY (84%)

GEOGRAPHIC: TALLAHASSEE, FL, USA (93%) FLORIDA, USA (94%); MARYLAND, USA (79%) UNITED STATES (95%)

LOAD-DATE: July 21, 2010

LANGUAGE: ENGLISH

PUBLICATION-TYPE: Newsletter