AddictionTherapy-2013

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference and Exhibition on
Addiction Research & Therapy

July 22-24, 2013 Las Vegas, USA

Biological targets for medication development in stimulant addiction: Focus on DAT and TAAR1

Juan J. Canales
University of Canterbury, New Zealand

Abstract

There continues to be an enormous unmet need for prevention, treatment, care and support for those who suffer from stimulant addiction. Research into treatment for problematic stimulant abuse has yet to find a suitable pharmacotherapeutic agent to assist with detoxification, withdrawal, and relapse prevention. The dopamine transporter (DAT) still constitutes a major target for the development of more effective pharmacotherapies for stimulant addiction. The rationale for targeting the DAT in stimulant abuse is fuelled by the existence of slow-onset, long-acting DAT inhibitors with weak stimulant and reinforcing effects, which can be used as a "substitute". The recently designed generation of benztropine (BZT) derivatives includes compounds with high affinity for the DAT and markedly low abuse liability. I will present evidence that we and others have accumulated in recent years demonstrating that BZT derivatives show psychopharmacological features consistent with those of an ideal replacement or "substitute" treatment. BZT analogues, such as AHN-1055 and JHW 007, block cocaine-induced stimulant-induced locomotor stimulation, sensitization, reward and reinforcement, and can mitigate relapse to drug seeking behavior. I will also discuss the potential role of the newly discovered trace amine associated receptor 1 (TAAR1) as a receptor target for medication development in stimulant abuse. There is evidence of functional regulation of DAT activity by TAAR1, which is activated directly by amphetamine, methamphetamine, and MDMA. Recent preclinical data suggests that compounds with activity at TAAR1 may be promising pharmacotherapies in stimulant addiction.

Biography

Juan J. Canales is an Associate Professor in Behavioral Neuroscience at the University of Canterbury, New Zealand. He completed his Ph.D. at the University of Oxford, UK, in 1997 and has conducted research at the Massachusetts Institute of Technology, USA, and the University of Valencia, Spain. His research focuses in the neurobiology and neuropharmacology of addiction and addiction-related disorders, and the impact of drugs on cognitive function. He is the Editor-in-Chief of the Journal of Behavioral and Brain Science and serves in the editorial board of several other scientific journals.

juan.canales@canterbury.ac.nz