

# *Review of Clinical Pharmacology and Pharmacokinetics*

ΕΠΙΘΕΟΡΗΣΗ ΚΛΙΝΙΚΗΣ ΦΑΡΜΑΚΟΛΟΓΙΑΣ ΚΑΙ ΦΑΡΜΑΚΟΚΙΝΗΤΙΚΗΣ  
ΕΠΙΘΕΩΡΗΣΗ ΚΛΙΝΙΚΗΣ ΦΑΡΜΑΚΟΛΟΓΙΑΣ ΚΑΙ ΦΑΡΜΑΚΟΚΙΝΗΤΙΚΗΣ  
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Μιχαλακοπούλου 145, 11527 Αθήνα, Ελλάς  
Τηλ.-Fax (0030)2107784700, 2107700663, 6932203802  
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## Letter from Guest Editor

The progress and contributions of 20<sup>th</sup> century pharmacology has been immense with over 20 pharmacologists to have received Nobel Prizes. This field of medical studies covers many areas; it is built upon and at the same time incorporates many disciplines such as biochemistry, biology physiology, pathology, anatomy, molecular biology, while the development of new analytical and experimental techniques and instruments has given a new boost in pharmacological research. Yet, although a remarkable progress has been made in developing new drugs and in understanding how they act, the challenges are endless. Integrating a depth of knowledge in many related scientific disciplines, pharmacologists offer a unique perspective to solving drug and chemical related problems which impinge on human health, with ultimate goal the treatment and prevention of major diseases.

The 5<sup>th</sup> Panhellenic Congress of Pharmacology focuses on four *hot* subjects: Regenerative Pharmacology, Herbal Medicines, Pharmacology of Abuse and Dependence, and Education in Pharmacology.

- *Regenerative Pharmacology* is one of the newest areas in Pharmacology, represents a groundbreaking field of research and has the potential to radically alter the treatment of diseases and disorders.

- *Herbal Medicines* have acquired an important percentage among the drug used; according to WHO 80% of people worldwide rely on herbal medicines for some aspect of their primary health care. This continuously increasing use of plant medicines imposes the need for establishing new regulations.

- *Pharmacology of Abuse and Dependence*, still not a well defined area, presents a lot of challenge for researchers and clinicians.

- *Education in Pharmacology* remains a hot subject in the Medical education, following the knowledge *explosion* of the last decades accompanied by a decreasing reliance on didactic teaching. The crucial question is: how and what should we teach?

We hope that the round table discussions along with the invited lectures, included in this abstract book, will raise new and intriguing ques-

tions that will further stimulate research, and will contribute to new therapeutic approaches and attitudes.

I would like to thank the Editorial Board of *Review of Clinical Pharmacology and Pharmacokinetics* in particular Journal Editors Prof. S.T. Plessas and Dr C.T. Plessas for invitation and for providing the suitable and high-standard forum through which new research findings will become available to the scientific community.

*The Guest Editor*

*Charis Liapi*

Assist. Professor in Pharmacology  
Medical School, University of Athens  
Chair of Hellenic Society of Pharmacology

## Dopaminergic Modifications Following WIN 55,212-2 Administration in the Conditioned Place Preference Paradigm

A. Polissidis<sup>1</sup>, O. Chouliara<sup>2</sup>, A. Galanopoulos<sup>1</sup>, E. Tzavara<sup>3</sup>, M. Marselos<sup>2</sup>, Z. Papadopoulou-Daifoti<sup>1</sup>, K. Antoniou<sup>2</sup>.

<sup>1</sup>Department of Pharmacology, Medical School, University of Athens, 11527 Athens, Greece

<sup>2</sup>Department of Pharmacology, Medical School, University of Ioannina, 45110 Ioannina, Greece

<sup>3</sup>INSERM U-513, Neurobiology and Psychiatry, Faculty of Medicine, 8, rue du Général Sarrail, 94010, Creteil, France

*Key words:* WIN, conditioned place preference, dopamine, rat

*S u m m a r y:* In the present study, the effects of low dose administration of the synthetic cannabinoid agonist, WIN 55,212-2 (WIN), was assessed in the conditioned place preference (CPP) paradigm along with dopaminergic activity in discrete rat brain regions essentially related to the reward system. WIN administration induced a weak CPP, however, dopaminergic activity was modified in all brain regions studied.

### INTRODUCTION

Cannabinoids have clear addictive properties at the human level, however, the abuse potential of cannabis and the reinforcing and/or appetitive properties of THC and other synthetic cannabinoid analogues, is still a matter of debate due to conflicting results derived from animal studies. Although most drugs of abuse, including cannabinoids, induce an increase in dopaminergic function, there are few studies focusing on the effects of CPP on dopaminergic function. Thus, the dopaminergic activity in discrete rat brain regions, essentially related to the reward system, was estimated following low dose WIN administration, in the CPP procedure.

### METHODS

Male Sprague–Dawley rats were subjected to the CPP paradigm. The CPP procedure consisted of three phases: preconditioning, conditioning and postconditioning. Conditioning sessions were conducted once daily for 8 days. Rats were treated alternately with WIN 0.1 mg/kg and vehicle during this period and were then placed into

the respective treatment-paired compartment for 30 min. On test day, neither drug nor vehicle was injected and all rats were placed into the 'neutral' compartment, with free access to both sides for a 15-min period. The amount of time spent on each side was automatically recorded as an index of drug seeking behavior. Subsequently, all rats were sacrificed and levels of dopamine and its metabolites DOPAC and HVA in specific brain regions were estimated using High Performance Liquid Chromatography with electrochemical detection (HPLC-ED). The dopamine turnover ratios (DOPAC/DA and HVA/DA) were also calculated as an index of dopaminergic activity.

### RESULTS

Rats that were treated with WIN displayed weak appetitive properties in the conditioned place preference paradigm. Interestingly, dopaminergic activity was modified in all brain regions examined following WIN administration in the CPP.

### DISCUSSION

Present results demonstrate that a modified mesolimbic dopaminergic activity exists in the undrugged phase of the CPP procedure following a cannabinoid agonist. This effect paralleled the aforementioned behavioral effect observed following WIN administration in the CPP paradigm.



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