

# *Review of Clinical Pharmacology and Pharmacokinetics*

ΕΠΙΘΕΟΡΕΣΕ ΚΛΙΝΙΚΕΣ ΦΑΡΜΑΚΟΛΟΓΙΑΣ ΚΑΙ ΦΑΡΜΑΚΟΚΙΝΗΤΙΚΕΣ  
ΕΠΙΘΕΩΡΗΣΗ ΚΛΙΝΙΚΗΣ ΦΑΡΜΑΚΟΛΟΓΙΑΣ ΚΑΙ ΦΑΡΜΑΚΟΚΙΝΗΤΙΚΗΣ  
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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

## Antiatheromatic and Hypolipidemic Activity of Chios Mastic Gum in Anesthetized Rabbits

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**Key words:** Chios mastic gum, antiatheromatic, hypolipidemic, infarct size

### INTRODUCTION

Chios Mastic gum, the resin of the trunk and brunches of *Pistacia lentiscus* var. Chia, has been used since antiquity in traditional Greek medicine and its healing properties are mentioned by most medical writers of the classic era. The main compounds of mastic are triterpenes, both acidic and neutral. Tirucallol and butyrospermol, the main neutral components, possess phytosterolic structure. This led to the hypothesis that mastic and particularly its neutral phytosterolic fraction could possess antiatheromatic activities, because of the known effect of plant sterols on the atheromatic disease. The aim of the present study was to evaluate the potential antiatheromatic activity *in vivo*.

### METHODS

Mastic Total Extract without Polymer (TMEWP) and the phytosterolic fraction (Neutral Mastic Fraction, NMF), were administered to rabbits in the form of sunflower oil solution. Anesthetized rabbits were subjected to 30 min regional ischemia of the heart, followed by 3 hrs of reperfusion and were randomized into 6 groups as follows: *Normal fed animals: Control* with no additional intervention, *Group A*, treated with 46.3mg/(kg-d) of TMEWP for 6 weeks, *Group B*, treated with 45.8mg/(kg-d) of NMF for 6 weeks. *Animals fed with cholesterol-enriched diet for 6 weeks: CHOL* group no additional intervention, *Group C*, treated

with 46.3mg/(kg-d) of TMEWP for 6 weeks, *Group D*, treated with 45.8mg/(kg-d) of NMF for 6 weeks. At the end of the experiment the area at risk and the infarct zone were determined with the aid of fluorescent particles and triphenyl tetrazolium chloride staining, and small segments of the ascending and descending aorta and the heart were taken for histologic examination. Blood samples were collected at several time points, for malondialdehyde (MDA) evaluation as an index of lipid peroxidation and for total cholesterol determination.

### RESULTS

The phytosterolic fraction (NMF) reduced the infarct size (18.3±3.4%, p<0.05), while the administration of mastic total extract (TMEWP) did not reduce the infarct size significantly (30.3±4.7% vs 47.0±1.9% in the control group) in the normal fed rabbits. In the hypercholesterolemic rabbits no reduction on infarct size was observed by both treatments. Atherogenesis was detected in the form of subintimal accumulation of lipids and foamy macrophages. There was no detection of atherosclerosis in Group A and Group B. Treatment for 6 weeks with TMEWP and NMF reduced the total cholesterol concentration by 47 and 88% respectively (p<0.01). Lipid peroxidation product levels were elevated in all study groups at the 20<sup>th</sup> min of reperfusion compared to the baseline values.



#### CONCLUSIONS

Long-term treatment for 6 weeks of Mastic Total Extract without Polymer (TMEWP) and the phytosterolic fraction (NMF) possesses significant antiatheromatic and hypolipidemic activities in the

hypercholesterolemic rabbits in vivo without decreasing the oxidative stress during reperfusion. The phytosterolic fraction reduces significant the infarct size in the normal fed rabbits.

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