Free Radical Research

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Official Journal of the Society of Free Radical Research – European Region

Aims and Scope

Free Radical Research aims to publish high-quality research papers, hypotheses and reviews in all areas in the fields of:

- Free radicals and other reactive species in biological, clinical, environmental and other systems
- Redox signalling
- Antioxidants, including diet-derived antioxidants and other relevant aspects of human nutrition
- Oxidative damage, mechanisms and measurement

Manuscripts should contribute a significant advance to the field, supported by clearly-presented data and statistical analysis, where necessary. Manuscripts should be as concise as possible subject to the need to present relevant background, data and methods. Reviewers are strongly encouraged to identify areas of the manuscript that could be shortened. *Free Radical Research* discourages papers that are purely descriptive (e.g. a catalogue of changes in antioxidant levels in a human disease of after administering, for example, a plant extract or a toxin to an animal). We also discourage screening papers, such as the use of total antioxidant activity assays to compare the antioxidant activities of plant extracts or herbal medicines including traditional medicines.

Further information about the Journal, including links to the online sample copy and contents pages, can be found on the Journal homepage: **www.informaworld.com/FreeRadicalResearch**

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Abbreviations

ML	Main Lecture
PL	Plenary Lecture
WL	Workshop Lecture
YIA	Young Investigator Award Lecture
OP	Oral Presentation
VESS	Vitamin E Statellite Meeting
P	Poster

Contents

trophil's functionality, assessed by phagocytosis and metabolic activity (VEGA 2/0090/08, APVV-51-017905, APVV-21-055205, COST B35).

PVI-12 YIA

Novel 1,2,4-triazole-3-acetate derivatives combining anti-inflammatory and antioxidant properties

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Non-steroidal anti-inflammatory drugs (NSAIDs) are the most widely used agents for the treatment of inflammation and highly prescribed medications. However, the common NSAIDs possess major side-effects, mainly gastrointestinal complications. It is also well known that reactive oxygen species are implicated in inflammation. Therefore, anti-inflammatory agents devoid of the gastrointestinal side-effects and combining antioxidant activity may be an important therapeutic tool for long anti-inflammatory treatment.

Substituted 1,2,4-triazole-3-acetates have been reported to acquire anti-inflammatory activity with reduced gastrointestinal toxicity. Having these properties in mind, we designed and developed some substituted analogues of 1,2,4-triazole-3-acetate amidated with an antioxidant molecule, such as trimethoxybenzoic acid or 3,5-di-tert-butyl-4-hydroxybenzoic acid. It is therfore anticipated that these compounds would acquire combined anti-inflammatory activity without the above-mentioned drawbacks, as well as antioxidant protection.

The synthesis of the novel compounds, along with the results on the reduction on the caragennan-induced paw oedema in rats, their effect on inflammation enzymes and the ability of the molecules to inhibit lipid peroxidation of rat hepatic microsomal membranes will be presented. Finally, an attempt to correlate structural characteristics and their contribution to the overall activity will be made.

PVI-13

Reactive oxygen metabolites and chronic low intensity inflammation in haemodialysed patients-influence of age and duration of haemodialysis

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Chronic low intensity inflammation and increased oxidative stress are recognized as important risk factors for morbidity and mortality in haemodyalised patients.

The aim of this study was to elucidate the connection between reactive oxygen metabolites (dROMs), hsCRP, age and duration of haemodialysis.

In the beginning of study both hsCRP (original immuno-turbidimetric method for Olympus AU400) and dROMs (Diacron, application for Olympus AU400) were measured. During the follow-up only hsCRP was measured (three, six and ten months later). Only patients with lowest value (or at least within the same class: < 1; 1–3; > 3 mg/l) of hsCRP at first measurement were included.

Patients fulfilling inclusion criteria were divided in three groups: I group (n=24) with dROMs lower than 400 (normal and low to middle level of oxidative stress; only three of them had normal levels of oxidative status: 250–300); II group (n=13) with dROMs 401–500 (high level of oxidative stress); III group (n=8) with dROMs over 501 CARR U (very high level of oxidative stress).

There was a statistically significant difference for hsCRP between first and third group ($1.59+/-1.16$: $11.91+/-10.21$ mg/l; $p<0.05$) and second and third group ($1.72+/-1.27$: $11.91+/-10.21$ mg/l; $p<0.05$). There was also a statistically significant difference for age between first and third group ($57+/-10$: $67+/-11$ years; $p<0.05$) and first and second group ($57+/-10$: $66+/-11$ years; $p<0.025$). There was not a significant difference for duration of haemodialysis between these three groups.

PVI-14

Isoprostanes as biomarkers of borreliosis development

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Among agents transmitted by ticks, a significant role in human pathology play viruses of tick borne-encephalitis and spirochaetes Borrelia burgdorferi sensu lato. Because course of tick-borne encephalitis (TBE) and borreliosis are accompanied by inflammation and oxidative stress formation, levels of MDA and 8-iso-PGF2α, as potential biomarkers of development of these diseases, were measured. MDA (HPLC) and 8-iso- PGF2α (LCMS) were determined in plasma, cerebrospinal fluid and urine of patients with clinical symptoms of neuroborreliosis (7 patients) and tick-borne encephalitis (12 patients). MDA level was found to be higher by 20% in plasma, by 25% in cerebrospinal fluid and by 15% in urine in patients with suspected neuroborreliosis compared to control group. However MDA level was higher by 25% in plasma, by 28% in cerebrospinal fluid and by 10% in urine in patients with diagnosed TBE compared to the control group. The level of isoprostanes was increased 10 times in plasma, 7 times in the cerebrospinal fluid and 5 times in the urine of patients with suspected neuroborreliosis compared to the controls. However in case of patients diagnosed with tick-borne encephalitis, the level of isoprostanes was increased 4 times in the plasma, 3 times in the cerebrospinal fluid and 2 times in the urine compared to the control. Simultaneously, changes in the levels of isoprostanes in the plasma, cerebrospinal fluid and urine were found to be in correlation with one another. Therefore, it might be suggested that determination of isoprostanes in the urine or plasma should confirm clinical diagnosis in which case the examination of cerebrospinal fluid will not be necessary.

PVI-15

Improvement of total antioxidant capacity a possible bioeffect of the ultrasound therapy

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The importance of the oxidative stress in osteoarthritis (OA) is well renowned at present. The ultrasound therapy is successfully used nowadays to treat OA, but without precise understanding of the mechanism of action.

The present study has monitored the effects of the ultrasound therapy over the clinical and functional parameters and over the antioxidant status in patients with OA.

A group of 12 patients diagnosed with OA were treated with ultrasound therapy: 0,5 W/cm2, 5 minutes, 10 sessions (5 times/week). Before and in the end of the therapy were measured the Womac score (WS), the Laquesne index (LI), and the total antioxidant status (TAS) by using colorimetric method and Rel Assay kit.

A statistically significant amelioration ($p<0.05$) was observed regarding all studied parameters (WS, LI and TAS).

The increase of the total antioxidant capacity could represent one of the mechanisms through which the ultrasound therapy exerts its favorable effects in OA.

PVI-16

Inhibition of nitric oxide production prevents apoptotic features mediated by inflammation in immature neurons

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