COLLOQUIA IN PHYSIOLOGY AND VASCULAR BIOLOGY

Venue: Medical University Vienna, Center for Physiology and Pharmacology,

Institute of Physiology, Schwarzspanierstraße 17, 1090 Vienna,

"**Big Lecture Hall Physiology**"

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Friday 20.05.2016 15:00 s.t. **Valery Bochkov** (host: J. Schmid)

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"Antiinflammatory and cell-protective effects of oxidized phospholipids"

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Abstract:
Oxidized phospholipids (OxPLs) containing oxidized fatty acids esterified in phospholipid backbone are known to induce multiple effects potentially relevant to atherosclerosis including proinflammatory and toxic action on endothelial cells. In good agreement with these pathological effects, OxPLs have been shown to activate cellular stress pathways such as unfolded protein response and electrophilic stress response. However, OxPLs also induce several biological effects that do not fit into the stereotype of „bad" lipids. For example, exogenously applied OxPLs have been shown in vitro and in vivo to inhibit inflammation induced by agonists of toll-like receptors, protect endothelial barrier in lungs and induce angiogenesis. We made an unexpected observation that addition of OxPLs to cultured endothelial cells protected them from toxic action of low-serum medium, chemical inducers of apoptosis, lysophosphatidylcholine or hydrogen peroxide. Our data suggest that at least partially these effects were mediated by production of growth factors, peptides and eicosanoids acting in a paracrine manner. These beneficial effects apparently represent a compensatory reaction of endothelial cells to the toxic action of OxPLs. Dying endothelial cells produce paracrine survival factors thus helping adjacent cells to recover from damage. Further study of protective feedback induced by atherogenic OxPLs can help in identification of new mechanisms of endothelial protection and potential drug targets promoting return of stressed endothelium to healthy functional state.