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HIBISCUS FLOWERS AND OLIVE LEAVES EXTRACTS-BASED FORMULATION IN NEURODEGENERATION: A NETWORK-BASED APPROACH

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Despite high clinical heterogeneity, neurodegenerative disorders share many common etiologic features involving increased ROS formation and inflammation. ROS worsen the progression of the disease owing to oxidative damage and impaired mitochondrial function. Moreover, the accumulation of misfolded proteins contributes to the onset and progression of brain inflammatory response, which in turn, increases ROS release and subsequent oxidative stress (OS). Thus, the reduction of ROS levels may be a promising strategy to delay neurodegeneration. In this view many vegetal extracts and natural compounds endowed with antioxidant (but not only) properties are currently under clinical investigations. Pres Phytum[®] is a nutraceutical product composed by leaves- and flowers-extracts of *Olea europaea* L. and *Hibiscus sabdariffa* L., respectively, whose composition has already been characterized by HPLC coupled to a UV-Vis and QqQ-Ms detector. The effects of the components of this natural extracts are widely reported and most of them are mostly due to their antioxidant, antiapoptotic and anti-inflammatory properties. The aim of this study was to assess neuroprotective effects of PRES in *in vitro* models of OS-mediated injury. Human neuroblastoma SH-SY5Y cells or rat brain slices were treated with hydrogen peroxide and neuronal damage as well as Pres Phytum[®] neuroprotective effects was assessed. Results showed that Pres Phytum[®] treatment reverted the increase in sub-diploid, dapi-and annexin V-positive-cells caused by hydrogen-peroxide challenge in SHSY-5Y cells. Furthermore, Pres Phytum[®] reduced ROS formation, as well as changes in the mitochondrial potential ($\Delta\Psi_m$) and caspase-3, 8 and 9 activity caused by OS. Pres Phytum[®] neuroprotective effects were confirmed also in rat brain slices. In conclusion, natural compounds still present a great challenge in finding an appropriate treatment to these devastating diseases. In this regards, the present results suggest the possibility of Pres Phytum[®] as a new preventive strategy for patients with high risk of these pathologies.

NEW DEVELOPMENTS AND PROSPECTIVES IN CATALYSIS BY METAL OXIDES

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This presentation deals with acid-base, redox, oxidation catalytic reactions and more general catalytic properties of metal oxides and their recent developments in the field of heterogeneous catalysis, a field of high applied interest. It includes a description of the main metal oxide catalysts used for acid-base (various reactions), redox (partial and total oxidations) and other reactions and of the main industrial processes using or expected to use them. Some case studies have been chosen as examples of recent progresses in metal oxides syntheses leading to new 2D, 3D materials and these reactions. Particular attention is borne on recent and future researches and perspectives, mainly monitored by actual society regulations related to environmental issues, uses of biomass derivatives, carbon neutral processes and sustainability.