EDITORIAL

Redox Experimental Medicine: Linking redox research to human health and disease

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It is increasingly clear that the chemical electron exchange processes implying oxidation and reduction (redox) of various molecules have actually a great physiological role in a variety of tissue/organ functions, and, in particular, they represent the key network of adaptive reactions to metabolic variations and environmental changes or stressors, in all living systems. Alteration and impairment of such complex redox network could lead to acute and more frequent chronic disease conditions, and thus, it is a matter of great interest in medicine.

When referring to disease processes occurring in humans, one should keep in mind that non-communicable diseases are almost always multifactorial and multiphasic. The experimental investigation of the pathophysiological role of a single molecule or a molecular pathway is certainly essential, but it cannot stand alone and needs to be part of a more comprehensive study project, taking into account the complex reality of the human organism. In other words, experimental studies carried out possibly with a ‘mechanistic eye’, but primarily with a medical orientation, are necessary.

Nowadays, more and more research reports, including in the redox field, are combining data obtained in cellular and/or animal models with data achieved in humans, in ex vivo conditions, or in human biological fluids or tissue samples. The findings from the latter settings are obviously more often observational but not less important, especially if they validate and complete a given research study.

In our opinion, redox experimental research with a medical orientation (in other words: experimental medicine) needs to be better promoted and suitably supported from an editorial perspective. These facts and considerations prompted us to launch a new redox journal devoted to experimental medicine and, of course, to experimental therapy with redox drug products and nutraceuticals. Mechanistic and toxicological analyses are mainly or previously affordable through cell culture and/or animal models, and so, studies employing these models will be favourably considered for publication in the new journal, provided they have a clear translational element.

The appropriateness, the quality and the originality of the studies submitted to Redox Experimental Medicine will be very carefully evaluated. The founding editorial panel of the journal purposefully consists of several MDs, scientists and clinicians, as well as experts in experimental therapeutics, and the large majority of the board’s editors are working in clinical settings.

Medicine does not mean disease diagnosis and treatment only but also includes more and more primary and secondary disease prevention. In these interventions, besides drug or nutraceutical administration, correct nutrition certainly plays a major role. Submissions of experimental approaches of this kind will be welcome but will be scrutinised by the discerning editorial board.

The inaugural issue of Redox Experimental Medicine consists of a number of invited review papers focusing on the redox aspects of a large variety of human pathological disorders, associated with oxidative stress, like the involvement of oxidant species in the early attempt of the organism to counteract sepsis (Beltrán-García et al. 2022), in the dysfunction of endothelial nitric oxide synthase occurring in vascular diseases (Negre-Salvayre et al. 2022), in liver regeneration (Bellanti et al. 2022), in the complex inflammatory reactions promoting the progression of
non-alcoholic fatty liver disease (Sutti & Albano 2022) or the derangement of the microbiota–gut–brain axis (Poli et al. 2022). With regard to diabetes mellitus, nutritional supplementation with redox bioactive compounds was proposed to prevent or ameliorate muscle loss (Lee et al. 2022), and the improvement of mitochondrial function was outlined as one of the primary targets of this syndrome’s treatment (de Marañón et al. 2022). Of interest in the neuropsychiatric field are the systematic check of the literature concerning the actual applicability of measuring defined oxysterols as markers of Alzheimer’s disease (Ademowo & Dias 2022) and the reviews on the pathophysiological role of the redox-regulated protein DJ-1 in Parkinson’s disease and other pathologies (Dash et al. 2022), the potential therapeutic use of sirtuins in the treatment of Rett syndrome (Cordone et al. 2022), an appropriate insight into the mechanisms by which hypoxic preconditioning actually attenuates neuronal oxidative stress and damage was afforded (Millán et al. 2022). Finally, the impact of a major oxysterol of non-enzymatic origin, namely 7-ketocholesterol, in human pathophysiology, as well as in food science, was comprehensively examined (Ghaziel et al. 2022).

Of note, particular attention will be given to differentiate invited reviews from those recently published by other redox journals in order to offer to the interested readership additional, and not overlapping, original surveys in various fields related to human redox pathophysiology.

Our ambition is that Redox Experimental Medicine will serve as an essential publication for the international scientific community to translate experimental knowledge to redox-based preventive and/or therapeutic interventions, with a view to advancing healthcare around the world. Join us in this aim by publishing your experimental medicine papers in Redox Experimental Medicine.

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References
Sutti S & Albano E 2022 Oxidative stress in nonalcoholic fatty liver disease: a reappraisal of the role in supporting inflammatory mechanisms. Redox Experimental Medicine 1 R57–R68. (https://doi.org/10.1530/REM-22-0002)