Special Issue

Uremic Toxins and Hemodialysis: Mechanisms, Challenges, and Therapeutic Advances

Message from the Guest Editors

Hemodialysis (HD) is the world's most widely used renal replacement therapy for the management of end-stage kidney disease. Despite technological advances, plasma depuration performances remain limited and the accumulation of unremoved uremic toxins is still a major unsolved problem. Moreover, because of the comorbidities frequently associated with advanced age (diabetes, hypertension, cardiovascular disease, overweight, dyslipidemia, smoking, etc.), access to transplantation will not be possible for the vast majority of patients worldwide. Research is therefore still needed to better understand the key pathophysiological mechanisms behind the deleterious impact of uremic toxins on oxidative stress, endothelial dysfunction, and alterations to the microbiota, among other issues. Indeed, the therapeutic strategies depend on such research—whether they be medicinal or dietary, or combined with more sophisticated purification techniques. More than ever, an interdisciplinary approach to basic and clinical research on HD patients is crucial to improve the currently unfavorable overall prognosis linked to the numerous multi-systemic consequences.

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