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Renal cells as alternative methods for nephrotoxicity evaluation

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Among hospital admissions due to acute kidney injuries, 20% are due to drug-induced nephrotoxicity. This stems from the fact that available *in vivo* methods (animal) are unable to reliably predict nephrotoxic effects. Only 7% of all new drugs fail in preclinical studies arising from the onset of nephrotoxicity, while the incidence of acute kidney injury in patients in Intensive Care Units is approximately 30-50%. Therefore, it is paramount the development of new techniques for *in vitro* models (which also reduce the use of animals) and low-scale analyses to determine toxicological profiles, aimed at improving the early diagnosis of the toxicity of new molecules. Nevertheless, due to the functional and biochemical heterogeneity of nephrons, susceptibility to toxicity can vary among nephron segments. Thus, it becomes necessary to use renal strains from different parts of nephron. Some cell lines, such as the LLC - PK1 (proximal tubule), MDCK (distal tubule) and BGM (a mixture of cells of proximal and distal tubules), have all been employed to evaluate nephrotoxicity. For this reason, interdisciplinary in related areas becomes essential in an attempt to apply mutual knowledge. In the Toxicology Biochemistry to be addressed in this study is the biochemical pathway involved in the context of pathophysiology. Gene expression also has demonstrated an important tool to identify new biomarkers. Using drugs such as Cyclosporine, Amphotericin B, Gentamicin and Cisplatin our results suggest this strategy have predictive value to identify early toxic effects, improving the selection of the candidate for the clinical stage.

Biography

Carlos Alberto Tagliati is a Professor of Toxicology in the School of Pharmacy, Federal University of Minas Gerais, Brazil. He received his Master's degree in Toxicology and Toxicological Analysis and his Doctorate in Drugs and Medicines from the University of São Paulo (Brazil). He completed his Post-Doctorate in Toxicology *in vitro* from the Universidad de Murcia (Spain). He published many articles in national and international journals in the field of Toxicology. He is the author of book chapters in the areas of *in vivo* and *in vitro* Toxicology. She is the Project Coordinator in the area of *in vivo* and *in vitro* toxicity.

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