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Preclinical pharmacokinetic profile of a new drug candidate to treat sickle cell disease symptoms

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Sickle cell disease is among the most common genetic disorders worldwide and its treatment options are very limited. Thus, efforts to develop new therapies for this disease prompted to the synthesis of phthalimide derivatives. These derivatives showed the ability to reduce tumor necrosis factor α and increase levels of nitric oxide, two characteristics that can be crucial in the treatment of this disease. In this work, we present the preclinical pharmacokinetic study of one of these derivatives, the LAPDESF-SCD03. The LAPDESF-SCD03 was administered in Wistar rats at a dose of 5.2 mg/kg and sampling was performed at the times 5, 10, 15, 20, 30, 45 and 60 minutes. The plasmatic concentrations versus time curve was constructed and an one-compartment model had been applied to describe the concentration decay. This was used to calculate the main pharmacokinetic parameters. The observed outcomes included a short half-life of only 6 minutes, and an area under curve of 31.1 min. μ g/mL. The observed clearance was 178.1 mL/min.kg, leading to an extraction rate of 0.76. Therefore, it can be considered as a drug of high clearance. The volume of distribution, calculated by area method was 1.6 L/kg, much greater than the total plasma volume of the animal. Thus, the drug is certainly distributed outside the bloodstream. Further studies are being conducted to bring more information about the disposition and action of this drug. However, from this study, we can suggest that there is an elevated chance of action via metabolites, due to its fast bioconversion.

Biography

Campos M L has completed his master's degree from School of Pharmaceutical Sciences, Sao Paulo State University in Brazil and is going to finish his PhD from the same university with part of his research done at York University in Canada. He has published 15 papers and has been serving as a Scientific Journal Referee for three international journals.

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