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Development of high-capacity, cost-effective, and highly predictive eye-related bioavailability models

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The development and registration of the innovative or generic ophthalmic formulations have led to an increased demand for eye-related bioavailability assessments. Common bioavailability algorithms associated with other routes of application, such as the oral route, cannot be easily applied to eye-related bioavailability testing. The eye-related bioavailability of topically applied drugs is determined by their absorption through the anterior parts of the eye. The experimental techniques used in the preclinical studies focus on the diffusion-based cell and tissue models of ocular drug permeability. The tissue-based permeability studies are commonly performed using freshly excised animal corneal, conjunctival or scleral tissues mounted in diffusion chambers. Furthermore, several cell-based models of varying complexity have been developed to overcome the problems of animal models and establish a viable *in vitro* test system. There is an urgent need for standardization and implementation of high-capacity, cost-effective and highly predictive nonclinical screening models of eye-related bioavailability in research laboratories and the pharmaceutical industry. Here, we present our results in optimization of cell- and tissue-based models of the anterior eye segment in order to achieve the right balance between their predictability and throughput.

Biography

Jasmina Lovrić received her BSc in Pharmacy and PhD in Pharmaceutical sciences at University of Zagreb, Croatia. She completed the experimental part of her PhD thesis at McGill University, Canada, and Postdoctoral studies at the International Centre for Genetic Engineering and Biotechnology (ICGEB), Italy. She is currently an Assistant Professor at the Faculty of Pharmacy and Biochemistry, University of Zagreb. Her current research activities focus on the development of nano-based ophthalmic formulations, which requires the use of in vitro and ex vivo models of ocular barriers, making the optimization of these models an integral part of current research project.

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