EuroSciCon

May 10-11, 2018
Frankfurt, Germany

JOINT EVENT
22nd Edition of International Conference on
Immunology and Evolution of Infectious Diseases
&
12th Edition of International Conference on
Tissue Engineering and Regenerative Medicine

Alexandra Scheer et al., J Transm Dis Immun 2018, Volume 2
DOI: 10.21767/2573-0320-C2-006

PERFLUOROOCTYL BROMIDE VS. PERFLUORODECALIN: WHICH PERFLUOROCARBON IS PREFERABLE FOR ALBUMIN-DERIVED ARTIFICIAL OXYGEN CARRIERS?

Alexandra Scheer[1], Anna Wrobeln[2], Michael Kirsch[2] and **Katja B Ferenz[2]**
[1]University Hospital Essen, Germany
[2]University of Duisburg-Essen, Germany

Currently, perfluorodecalin (PFD) and perfluorooctyl bromide (PFOB) are the majorly used perfluorocarbons in the field of artificial oxygen carriers. So far, in our investigations only PFD has been employed as core material of albumin-derived artificial oxygen carriers (A-AOCs). This led to the question of whether PFOB would display an equally safe alternative in A-AOCs. To investigate toxicity, we studied A-AOCs with a PFOB-core in a top load model (TL) and compared the data with results from our previous studies with a PFD-core. TL (+1/6 of blood volume) experiments with 16 healthy Wistar rats were performed with and without (control) A-AOCs (17 vol. %), respectively. After the infusion period (30 min) rats were further observed up to 180 min. During TL systemic parameters, plasma enzyme activities and acid base status were continuously monitored. To confirm hemolysis obtained in the *in vivo* model, supporting *in vitro* studies were performed additionally: whole blood was incubated varying temperature, A-AOCs-concentration and mechanical stress. Blood pressure showed a transient drop during infusion of A-AOCs but was unaffected in the control group. Compared to control animals the PFOB-group displayed increased plasma enzyme activities. All effects after application of only 17 vol. % A-AOCs with PFOB-core were considerably more pronounced compared to 32 vol. % A-AOCs with PFD-core. Furthermore, hemolysis caused by A-AOCs with PFOB-core was significantly more distinct compared to A-AOCs with PFD-core. In conclusion, PFOB should be avoided as core material for A-AOCs because of distinct side-effects already occurring at low dosage.

Biography

Alexandra Scheer completed her Master's degree in Medical Biology in 2015. Since October 2015, she has been working on her Doctoral thesis at Institute of Physiological Chemistry-University Hospital Essen, Germany, in the working group of Dr Katja B Ferenz. Within the scope of this work, she is involved in the development and characterization of artificial oxygen carriers. Since February 2018, she followed Katja B Ferenz in the Institute of Physiology at University Hospital Essen, Germany, to continue her work. Her research interests include "Artificial oxygen carriers, biomaterials, nanoparticles and perfluorocarbons".

alexandra.scheer@uk-essen.de