Caine M et al., J Biotechnol Biomater 2016, 6:1(Suppl)
http://dx.doi.org/10.4172/2155-952X.C1.050

OMICS International
conferenceseries.com

Annual Conference and Expo on
Biomaterials

March 14-16, 2016 London, UK

In vitro characterisation method for comparative evaluation of drug loaded embolic distal perfusion

Caine M, Capretto L, Carugo D, Zhang X, Hill M, Willis SL, Dreher MR and **Lewis AL**
Biocompatibles UK Ltd, UK

In vitro biomimetic models have become increasingly utilised in the evaluation of medical devices over the last 30 years. Application in the field of Interventional Oncology for modelling purposes has been limited by the complexity of recreating biological vascular systems. Interventional Oncology and specifically embolisation, varies significantly in terms of its administration methodology. The specific process of blocking the primary blood supply to a hyper-vascularised tumour is anything but simple in terms of reproducibility and translation between patients, clinics and devices. Flow properties of drug-loaded embolic microspheres have been shown to influence the distribution, contact diffusion and spatial drug elution kinetics within tumours. Moreover, variations in the administration style of the physician have been shown to play a significant part in the intra-tumoural distribution. To model the unique flow properties of various embolic products, novel *in vitro* microfluidic test systems have been developed. Through compartmentalised recreations of clinical conditions, it becomes possible to predict and evaluate relevant flow properties prior to use *in vivo*. This presentation will analyse the effect of channel flow rate (Reynold's number) and embolic size of doxorubicin loaded DC Bead™ 70-150µm and 100-300µm within *in vitro* flow channels of sizes representative of distal hepatic microvasculature. The effect of whole bead distribution is considered as a vehicle for distal drug distribution utilising clinically representative injection volumes for modelling bolus effects. A significantly higher dose (p=0.017) is observed in smaller flow channels with 70-150µm vs 100-300µm trending with increased flow rates.

Biography

Marcus is an Innovation Scientist at BTG. Initially focusing on analytical method development and validation, he is currently completing a part-time PhD with the University of Southampton in Applied Biomimetic Microfluidics and focusing on the application of this project to advancing treatment in the field of interventional oncology and pulmonology.

mgc1u11@soton.ac.uk

Notes: