allied academies

Pharmaceutics & Drug Delivery Research 2018, Volume 7
DOI: 10.4172/2325-9604-C3-033

International Conference and Exhibition on Joint Event

Pharmaceutics & Novel Drug Delivery Systems

21st International Conference on &

Advanced Nanoscience and Nanotechnology

June 21-22, 2018 | London, UK

Advances and challenges in functionalised surface modification of liposomes for cytoplasmic drug delivery

Zimei Wu
The University of Auckland, New Zealand

Chemotherapy continues to play an important role in cancer treatment, but still faces major challenges, mainly poor tumour-selectivity and drug resistance. 'Targeted drug delivery' with liposomes has attracted great attention due to their potential for improving chemotherapeutic index and 15 liposomal products are already approved for clinical use. Surface modification of liposomes with polyethylene glycol (PEG) is still the gold standard. However, growing evidence shows that although the side effects in patients have been minimized by the use of PEGylated liposomes, the improvement in efficacy is usually marginal. This could partially be attributed to the poor cellular uptake and slow intracellular drug release as a result of PEGylation, known as PEG dilemma. This talk will outline the recent advances and principles for 'tumour-targeted cytoplasmic drug delivery' using new liposomes modified with various functionalized polymers in alternative to PEG. The strategy of tumour microenvironment-sensitive PEG-detachment will also be discussed. A greater understanding of these mechanisms will help to design more efficient drug delivery systems to address the challenges encountered in the current liposomal chemotherapy.

e: z.wu@auckland.ac.nz

Phytochemical and pharmacological study of volatile fractions from *Eucalyptus camaldulensis* leaves and their potent effects on isolated aortic and tracheal rings

Dlzar A Kheder[1,2], Omar A M Al-Habib[1], Gianluca Gilardoni[2,3] and **Giovani Vidari[2]**
[1]University of Zakho, Iraq
[2]University of Pavia, Italy
[3]Universidad Técnica Particular de Loja, Ecuador

The current study represents the first complete report on constituents of different volatile fractions (VF) from *Eucalyptus camaldulensis* leaves, as well as their effects on isolated aortic and tracheal rings. Four different volatile fractions obtained by hydro distillation (VFS, VFW, VFA and VFAr) showed different qualitative and quantitative compositions, though the major constituents in all the four samples were monoterpenes. The comparison of VFA and VFAr compositions with VFW clearly shows that, as expected, the aqueous phase collected in the condenser was more enriched in polar oxygenated monoterpenoids and sesquiterpenoids than in non-polar hydrocarbons. In conclusion, an important general consideration can be drawn about essential oil distillation from plants, namely, that significant amounts of oxygenated components can be dispersed in the aqueous phase collected in the condenser. Therefore, a more realistic analysis of plant volatile fraction must take into account not only the composition of the oily phase separated from the hydrosol, but also the mixture of polar compounds dispersed in water. The different VF induced vasorelaxation in concentration-dependent manner on isolated aortic rings. Both 1, 8-cineol and VF produced a potent relaxation in rat tracheal rings precontracted with ACh, whereas the relaxant effect of VFs on tracheal rings pretreated with nifedipine was significantly inhibited. Pretreatment of tracheal rings with TEA and L-NAME did not alter dose-dependent relaxation. These results suggested that KCa channel and NO pathway were not involved in the relaxation on tracheal rings induced by VFs. Further, there was no relaxant effect induced by cumulative additions of VFs samples to tracheal rings preincubated with the Ca^{2+} channel blocker nifedipine, indicating as a conclusion to the participation of Ca^{2+} channels.

e: dlzar.kheder@uoz.edu.krd