

5th International Conference on
**Medicinal Chemistry &
Computer Aided Drug Designing and Drug Delivery**
December 05-07, 2016 Phoenix, USA

Synthesis of doxorubicin-containing ionic liquid and study of its biological activity

Ksenia S Egorova, Fedor A Kucherov, Alexandra V Posvyatenko and Valentine P Ananikov
Russian Academy of Sciences, Russia

Ionic liquids (ILs), or molten salts, possess unique physicochemical and biological properties. The major advantage of ILs is their high tunability: practically any desirable features can be combined within one IL molecule. According to a novel API-IL (active pharmaceutical ingredient – ionic liquid) concept, traditional drugs can benefit from being used in the ionic liquid form. API-ILs is suggested to solve such major drawbacks of many traditional medicines as low solubility and polymorphism. In this work, we used this concept to synthesize API-IL, which contained doxorubicin as a biologically active moiety. Doxorubicin is a DNA intercalating agent commonly applied for treatment of various types of cancers. We introduced the doxorubicin moiety into an imidazolium IL via an amide bond to obtain the resulting API-IL (1-(doxorubicin-10-carboxydecyl)-3-methylimidazolium bromide). We studied cytotoxicity of the obtained DOX-IL towards Colo 320HSR cells (colon adenocarcinoma) in comparison with cytotoxicity of the pure doxorubicin chloride and 1-(10-carboxydecyl)-3-methylimidazolium bromide. According to preliminary results, doxorubicin and DOX-IL demonstrated comparable cytotoxicity towards Colo 320HSR cells (24-h IC_{50} ~6-9 μ M), whereas the IL without the doxorubicin moiety was significantly less cytotoxic (24-h IC_{50} >3000 μ M). Thus, introduction of doxorubicin into an ionic liquid did not disturb the biological activity of the drug. The results evidence promising potential of the API-IL strategy for pharmaceutical research.

Biography

Ksenia S Egorova graduated from Lomonosov Moscow State University with a Master of Science in Biochemistry in 2006. In 2010, she completed her PhD in Molecular Biology at the Institute of Molecular Genetics RAS (Moscow, Russia). Since 2012, she has been a researcher at N D Zelinsky Institute of Organic Chemistry. She is an author of 19 papers and three book chapters. Her interests include biological activity, natural products, cancer proteomics, ionic liquids and carbohydrate research.

danamad@gmail.com

Notes: