Ksenia S Egorova et al., J Clin Toxicol 2016, 6:6(Suppl)
http://dx.doi.org/10.4172/2161-0495.C1.022

7th Euro-Global Summit on
Toxicology & Applied Pharmacology
October 24-26, 2016 Rome, Italy

Salycilic acid-containing ionic liquids as drug models with ionic and covalent bonds

Ksenia S Egorova[1], **Marina M Seitkalieva**[1], **Alexandra V Posvyatenko**[2] and **Valentine P Ananikov**[1]
[1]N D Zelinsky Institute of Organic Chemistry, Russia
[2]Institute of Gene Biology - Russian Academy of Sciences, Russia

Ionic liquids (ILs) are fascinating chemicals with unique physicochemical and biological properties. The major advantage of ILs is their high tunability which suggests that practically any desirable properties can be combined within one IL molecule. A novel active pharmaceutical ingredient- ionic liquid (API-IL) concept proposes using traditional drugs in the form of ILs for solving the issues of low solubility and polymorphism which are major drawbacks of many traditional medicines. There are three ways to introduce API into IL: As an anion or a cation; via a covalent linkage or; employing both ionic and covalent binding. We used salicylic acid (SA) as a model drug and synthesized ILs (SA-ILs) which contained SA in the cation 1-(2-((2-hydroxybenzoyl) oxy)ethyl)-3-methylimidazolium tetrafluoroborate, 1-(2-((2 hydroxybenzoyl)oxy)ethyl)-3-methylimidazolium chloride, 1-(3-((2-hydroxybenzoyl)oxy)propyl)-3-methylimidazolium chloride), anion (1-ethyl-3-methylimidazolium salicylate, 1-butyl-3-methylimidazolium salicylate, 1-hexyl-3-methylimidazolium salicylate), or both cation and anion (1-(2-((2-hydroxybenzoyl)oxy) ethyl)-3-methylimidazolium salicylate) and studied their cytotoxicity in the human cell lines CaCo-2 (colorectal adenocarcinoma) and 3215 LS (normal fibroblasts), in comparison with conventional imidazolium ILs and SA. SA-ILs demonstrated significantly higher cytotoxicity than conventional ILs and were comparable with the pure SA. Moreover, SA-ILs displayed much higher water solubility than SA. Thus, introduction of salicylic acid into an ionic liquid either via covalent or ionic bond increased the solubility of SA and did not disturb its biological activity. The results confirm the strategy of API-ILs to be a promising tool for pharmaceutical research.

The work was supported by the Grant of the President of the Russian Federation (project MK-5053.2015.3)

Biography

Ksenia S Egorova completed her graduation 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 18 papers and three book chapters. Her research interests include "Biological activity, natural products, cancer proteomics, ionic liquids and carbohydrate research".

danamad@gmail.com

Notes: