

Development of Novel Ionic Liquids based on Valproate anion

Ricardo Ferraz,^{[a][b]} Alexandra Costa,^[b] Isabel Marrucho,^[c] Luís C. Branco,^[b] Cristina Prudêncio,^{[a][d]} João Paulo Noronha,^[b] Željko Petrovski^[b]

[a] Ciências Químicas e das Biomoléculas, Escola Superior de Tecnologia da Saúde do Porto do Instituto Politécnico do Porto, Rua Valente Perfeito, nº 322, 4400-330, Vila Nova de Gaia Portugal, ricardoferraz@eu.ipp.pt

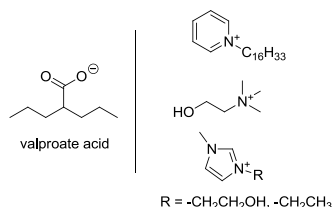
[b] Departamento de Química, REQUIMTE, Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa, 2829-516 Caparica, Portugal

[c] Instituto de Tecnologia Química e Biológica, ITQB, Universidade Nova de Lisboa, Av. da República Estação Agronómica Nacional 2780-157 Oeiras, Portugal

[d] Centro de Farmacologia e Biopatologia Química (U38-FCT) Faculdade de Medicina da Universidade do Porto, Alameda Prof. Hernâni Monteiro 4200 - 319 Porto, Portugal

Valproic acid (2-propyl pentanoic acid) is a pharmaceutical drug used for treatment of epileptic seizures absence, tonic-clonic (grand mal), complex partial seizures, and mania in bipolar disorder^[1]. Valproic acid is a slightly soluble in water and therefore as active pharmaceutical ingredient it is most commonly applied in form of sodium or magnesium valproate salt^[1]. However the list of adverse effects of these compounds is large and includes among others: tiredness, tremor, sedation and gastrointestinal disturbances^[2]. Ionic liquids (ILs) are promising compounds as Active Pharmaceutical Ingredients (APIs)^[3]. In this context, the combinations of the valproate anion with appropriate cation when ILs and salts are formed can significantly alter valproate physical, chemical and thermal properties.^[4] This methodology can be used for drug modification (alteration of drug solubility in water, lipids, bioavailability, etc)^[2] and therefore can eliminate some adverse effect of the drugs related to drug toxicity due for example to its solubility in water and lipids (interaction with intestines).

Herein, we will discuss the development of ILs based on valproate anion (Figure 1) prepared according a recent optimized and sustainable acid-base neutralization method^[4]. The organic cations such as cetylpyridinium, choline and imidazolium structures were selected based on their biocompatibility and recent applications in pharmacy^[3].



All novel API-ILs based on valproate have been studied in terms of their physical, chemical (viscosity, density, solubility) and thermal (calorimetric studies) properties as well as their biological activity.

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