

OC4: Ionic Liquids – From organic solvents to pharmaceutical applications

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Introduction: Ionic liquids are compounds that have melting temperature below 100°C and they have been evolved from traditional high temperature molten salts.. The quest for useful molten salts with lower melting temperatures led to inorganic chloroaluminates, to organic chloroaluminates and to organic salts now being developed for green chemistry applications and recently has been a major emphasis placed on ionic liquids as bearers of desired biological activity.

Objectives: Synthesis and study of physicochemical and biological properties of ILs from beta-lactam antibiotics, from the anti-fungal Amphotericin B and from the anti-epileptic valproic acid.

Materials and Methods: All the drugs used here were neutralized in a buffer by an appropriate hydroxide cations. The cation hydroxide was obtained on Amberlite resin (in the OH form) in order to exchange halides. The biological studies of these new compounds were made using techniques like the micro dilution and colorimetric methods.

Results and Discussion: The study of the biological properties of the synthesised ILs showed that some have antimicrobial activity against bacteria and yeast cells, even in resistant bacteria. Also this work allowed to show that ILs based on ampicillin could be used as anti-tumour agents

Conclusion: Overall a total of 25 new ILs were synthesised and characterized by spectroscopic and analytical methods in order to confirm their structure and purity. This shows that with a careful selection of the organic cation, it is possible to provoke important physico-chemical and biological alteration in the properties of ILs-APIs with great impact, having in mind their applications.

References

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