

SEPTEMBER
23-27TH
2024

19TH BMOS

BRAZILIAN MEETING
ON ORGANIC SYNTHESIS
BENTO GONÇALVES, RS - BRAZIL

Selenium-Functionalized Ionic Liquids: Synthesis and Biological Activity

M. F. Soares^{1*}, E. E. Alberto¹, A. Y. B. Ángel¹, A. S. Rosa², P. Constantino-Teles², T. K. F. Oliveira², J. Nilo², V. N. S. Ferreira², M. D. Miranda², F. D. Silva², A. S. Prestes³, C. M. Fernandes³, P. A. Nogara³, N. V. Barbosa³ and J. B.T. Rocha³

1) Department of Chemistry, Universidade Federal de Minas Gerais - UFMG

2) Viral Morphology and Morphogenesis Laboratory, Instituto Oswaldo Cruz - Fiocruz/RJ

3) Department of Biochemistry and Molecular Biology, Universidade Federal de Santa Maria - UFSM

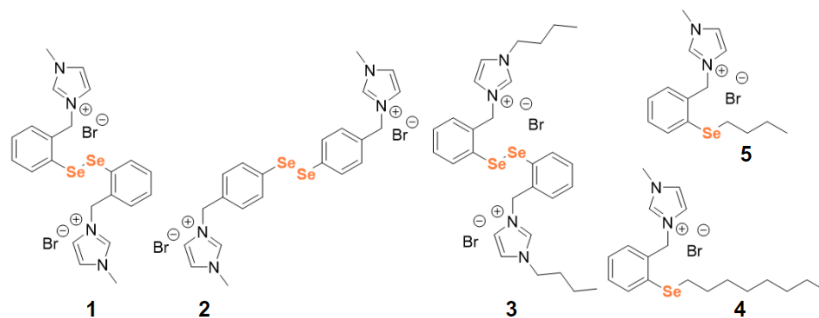
*e-mail: soares.mrfs@gmail.com

Keywords: Ionic Liquids, Selenium, Biological activity

ABSTRACT

The versatility of selenium-derived organic compounds has increasingly highlighted their chemical and biological relevance. By combining these with the unique properties of Ionic Liquids (ILs), this study focuses on synthesizing five selenium-imidazole functionalized ILs (Scheme 1), with two novel additions (4 and 5) to this class of compounds. Furthermore, these compounds exhibit great solubility in water, showcasing their versatility for bioavailability assays.

Thus, bioactivity experiments were conducted on Calu and Vero cells and demonstrated the efficacy of these ILs against the SARS-CoV-2 virus whilst still maintaining low cell toxicity, potentially underscoring their therapeutic nature. Cell toxicity induced by the compounds was also verified by the MTT assay, monitoring dehydrogenase activity, and trypan blue assay, both of which yielded favorable results.



Scheme 1. Ionic Liquids Synthesized

This research aims to contribute to the development of new antimicrobial and antiviral agents by exploring the unique properties of these selenium-derived Ionic Liquids.

ACKNOWLEDGEMENTS

This work is funded by FAPEMIG, CNPq, and CAPES.

REFERENCES

1. Bastidas Ángel, A. Y. **Compostos de organoselênio como catalisadores em reações de substituição nucleofílica e avaliação antimicrobiana de líquidos iônicos contendo selênio**. Tese de Doutorado, Instituto de Ciências Exatas, Universidade Federal de Minas Gerais, Belo Horizonte, 2023.
2. Pałkowski, L.; Karolak, M.; Skrzypeczak, A.; Wojcieszak, M.; Walkiewicz, F.; Jaroch, K.; Bojko, B.; Kański, K. M.; Kański, J. **Antimicrobial and Cytotoxic Activity of Novel Imidazolium-Based Ionic Liquids**. *Molecules* 2022.
3. Alberto, E. E.; Rossato, L. L.; Alves, S. H.; Alves, D.; Braga, A. L. **Imidazolium ionic liquids containing selenium: Synthesis and antimicrobial activity**. *Org. Biomol. Chem.* 2011.
1. Haritha, C. V., Sharun, K. e Jose, B. **Ebselen, a new candidate therapeutic against SARS-CoV-2**. *Int. J. Surg.* 2020.