

SEPTEMBER  
23-27<sup>TH</sup>  
2024



BRAZILIAN MEETING  
ON ORGANIC SYNTHESIS  
BENTO GONÇALVES, RS - BRAZIL

## Small molecule drugs: Synthesis of SePh-benzocaine

Maria Julia Mileto<sup>1\*</sup> Ariana Silveira Lima<sup>1</sup> Gabriel Pereira da Costa<sup>2</sup>, Diego Alves<sup>1</sup>

<sup>1</sup> LASOL-CCQFA, Universidade Federal de Pelotas – UFPel, P.O. Box 354 - 96010-900, Pelotas, RS, Brazil.

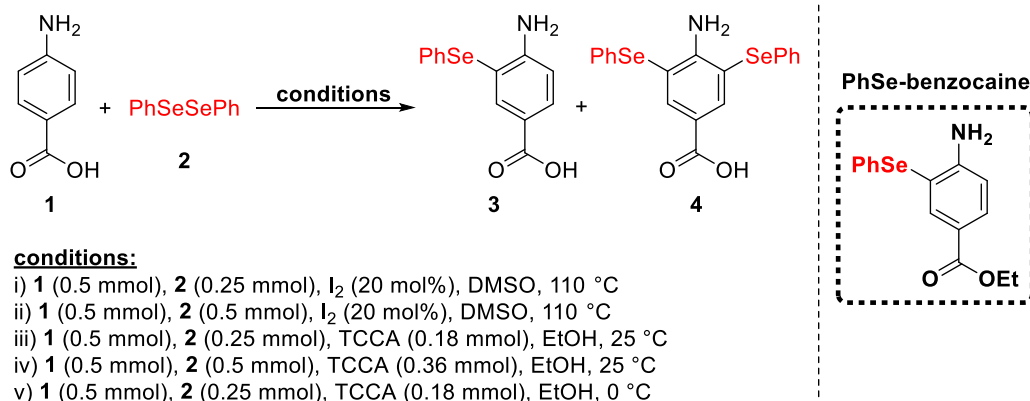
<sup>2</sup> School of chemistry and food - Federal University of Rio Grande, FURG, 96203-900, Rio Grande, RS, Brazil.

\*e-mail: [mariajuliamileto@gmail.com](mailto:mariajuliamileto@gmail.com)

Keywords: Selenium, organic synthesis, benzocaine

### ABSTRACT

Compounds containing selenium are increasingly notable due to their potential applications in biochemistry, organic synthesis, and materials science.<sup>1</sup> They stand out in medicinal chemistry for their promising pharmacological properties, such as anti-inflammatory, anticancer, and antidepressant effects.<sup>2</sup> In this sense, benzocaine is a significant compound in the field of medicine due to its wide range of applications as a local anesthetic. Its ability to block nerve signals makes it essential for procedures requiring temporary numbing of specific areas.<sup>3</sup> In this sense, and in line with our objective of synthesizing small drugs containing selenium atoms in their structure, we describe in this work our efforts in the synthesis of selenylated benzocaine derivatives (SePh-benzocaine).



Scheme 1

To achieve our objective, a series of reaction conditions were tested between acid 4-aminobenzoic acid **1** and diphenyl diselenide **2** (Scheme 1). Under all tested conditions (i-v), a mixture of mono- (**3**) and bis-selenylation (**4**) products was obtained, with higher proportions of bis-selenylation products (**4**). We are still in the process of optimizing the reaction conditions to selectively obtain the mono- and bis-selenated products. Once the selectivity control of the reaction is achieved, an esterification reaction of the products will be carried out to synthesize PhSe-benzocaine.

### ACKNOWLEDGEMENTS

LaSOL, CNPq, CAPES, FAPERS e a UFPel.

### REFERENCES

- <sup>1</sup> Lenardão, E. J.; Santi, C.; Perin, G.; Alves, D. In *Organochalcogen compounds: Synthesis, catalysis, and new protocols with greener perspectives*, Elsevier, **2022**.
- <sup>2</sup> Nogueira, C. W.; Rocha, J. B. T. *Organoselenium and Organotellurium Compounds: Toxicology and pharmacology*, In *Patai's Chemistry of Functional Groups*, Wiley, Chichester **2011**.
- <sup>3</sup> Fischer, J.; Ganellin, C. R. In *Analogue-based Drug Discovery*, John Wiley & Sons, **2006**.
- <sup>4</sup> (a) Saba, S.; Rafique, J.; Braga, A. L. *Catal. Sci. Technol.* **2016**, *6*, 3087. (b) Blödorn, G. B.; Oliveira, I. C.; Roehrs, J. A.; Silva, M. S.; Alves, D. *ChemistrySelect* **2024**, *9*, e202400062.