10th Brazilian Conference on Natural Products
XXXVI RESEM
4-7 November 2025, Belo Horizonte, MG, Brazil
Section: 05

Synthesis of new salicylic acid derivatives with potential bioactivity

Jennifer Blandon Pardo[1], Andre G. Tempone[2], Dayana Agnes Santos Ferreira[2], Karina Alacid Salles[3], Sarah Christina Caldas Oliveira[3], Laura P. R. Figueroa[1], Warley de Souza Borges[1*]

laura.figueroa@edu.ufes.br

[1]*Center of Exact Sciences, Department of Chemistry, Universidade Federal do Espírito Santo, CEP 29075-910, Vitória, ES, Brazil*
[2]*Pathophysiology Laboratory, Butantan Institute, CEP 05503-900, São Paulo, SP, Brazil*
[3]*Institute of Biological Sciences, Department of Botany , Universidade de Brasilia, CEP 70910-900, Brasilia, DF, Brazil*

The derivatization of natural products enables the generation of novel molecular entities through straightforward synthetic methodologies, providing an effective route for the incorporation of diverse functional groups. This strategy facilitates the development of compound libraries with significant structural diversity. Salicylic acid derivatives have been widely used in the treatment of several conditions, with acetylsalicylic acid being the most well-known example due to its extensive use as an anti-inflammatory agent. Other derivatives, such as methyl salicylate, salol, and salicylanilide, are recognized for their analgesic, antipyretic, antimicrobial, antiproliferative, and cytotoxic properties. In this work, a series of 27 ether derivatives of salicylic acid were synthesized using the Williamson ether synthesis, as modifications in the ether moiety can influence biological activity. Structural elucidation was performed using NMR spectroscopy. The phytotoxicity of all synthesized compounds was evaluated, revealing weak to moderate activity. Additionally, antibacterial activity was assessed against multidrug-resistant bacteria (ESKAPE); however, no significant activity was observed for any of the compounds up to 100 µM.

Keywords: *salicylic acid, ether derivatives*
Acknowledgments: CAPES,CNPq, FAPES, LabPetro.

References:

[1]Chowdhury, M. A.; Abdellatif, K. R. A.; Dong, Y.; Das, D.; Yu, G.; Velázquez, C. A.; Suresh, M. R.; Knaus, E. E. Synthesis and Biological Evaluation of Salicylic Acid and N-Acetyl-2-Carboxybenzenesulfonamide Regioisomers Possessing a N-Difluoromethyl-1,2-Dihydropyrid-2-One Pharmacophore: Dual Inhibitors of Cyclooxygenases and 5-Lipoxygenase with Anti-Inflammatory Activity. Bioorganic Med. Chem. Lett. 2009, 19 (24).

[2]Wodnicka, A.; Huzar, E.; Krawczyk, M.; Kwiecień, H. Synthesis and Antifungal Activity of New Salicylic Acid Derivatives. Polish J. Chem. Technol. 2017, 19 (1).

[3]Yang, S. M.; Huang, Z. N.; Zhou, Z. S.; Hou, J.; Zheng, M. Y.; Wang, L. J.; Jiang, Y.; Zhou, X. Y.; Chen, Q. Y.; Li, S. H.; Li, F. N. Structure-Based Design, Structure-Activity Relationship Analysis, and Antitumor Activity of Diaryl Ether Derivatives. Arch. Pharm. Res. 2015, 38 (10).