SEPTEMBER 23-27 2024
19BMOS
BRAZILIAN MEETING ON ORGANIC SYNTHESIS
BENTO GONÇALVES, RS - BRAZIL

Exploring the Antidepressant Potential of Dihydropyrimidin-2-thiones with Sertraline-like Substitution Patterns

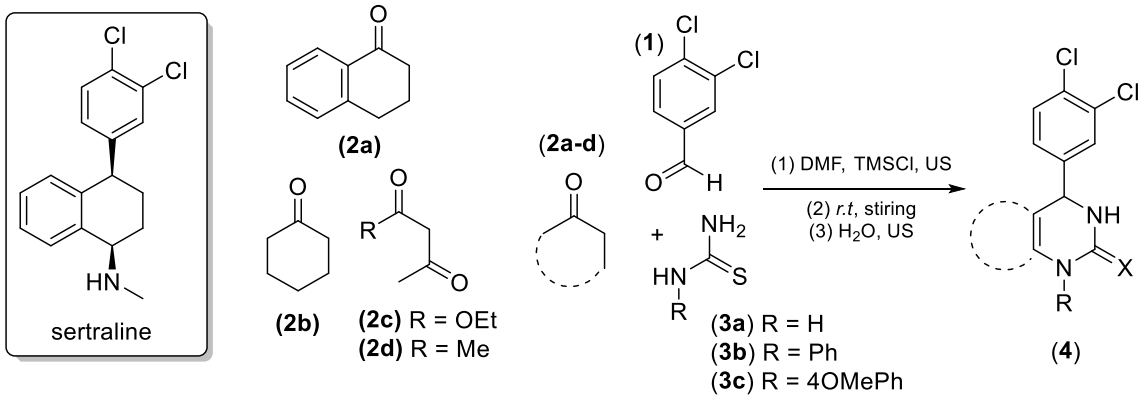
Itamar Luís Gonçalves[1*] Joao Pedro Kiack Zamadei[1] Aloir Antonio Merlo[2] Gustavo Machado das Neves[3] Luciano Porto Kagami[3], Vera Lucia Eifler-Lima[3]

1) Health Sciences Department, Regional Integrated University of Upper Uruguai and Missions, URI, 99709910
2) Department of Chemistry, Federal University of Rio Grande do Sul, UFRGS, 91501-970
3) Laboratório de Síntese Orgânica Medicinal LaSOM, Faculty of Pharmacy, Federal University of Rio Grande do Sul, UFRGS, 90610-000
****e-mail: itamar3141@yahoo.com.br***

Keywords: *Biginelli reaction; antidepressant effect; sertraline; dihydropyrimidin-2-thiones*

ABSTRACT

Dihydropyrimidin-2-thiones (DHPMs) are heterocyclic compounds widely investigated as privileged scaffolds capable of interacting with various biological targets. Although antiproliferative, antimicrobial, and antioxidant activities are the most studied roles for this class of compounds, their neuropharmacological activity has been poorly investigated[1]. Due to this aspect and the structural similarity between the antidepressant drug sertraline and DHPMs, we synthesized DHPMs featuring a 3,4-diCl-Ph moiety, as found in sertraline. The optimized reaction conditions involved using trimethylsilyl chloride as a promoter agent in *N,N*-dimethylformamide, utilizing ultrasound at room temperature. The DHPMs were obtained with a moderate yield and purified by ethanol or acetonitrile recrystallization. The compounds developed in this study will be evaluated for their antidepressant effects on planarians (*Girardia tigrina*), an alternative animal model that possesses many of the neurotransmitters found in vertebrates[2]. This is the first report to explore the similarity between the DHPM scaffold and the antidepressant sertraline.



Scheme 1. Synthesis of DHPMs with sertraline-like substitution patterns.US: ultrasound.

ACKNOWLEDGEMENTS

We are grateful to CNPq and FAPERGS call 07/2021 process n. 21/2551-0002121-7; call 07/2022 processes n. 23/2551-0000114-4 and 23/2551-0001944-2; call universal/2023 process n. 409009/2023-7 and call 14/2022 process n. 23/2551-0000919-6 for the financial support.

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