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Methodological Study for the Synthesis of Symmetric and Unsymmetrical Sulfides from Bunte Salts

Vitor E. S. Zerger[1], Alcindo A. Dos Santos[2]and Rogério A. Gariani[1*]
1) Department of Chemistry, Santa Catarina State University, UDESC, 89.219-710
2) Institute of Chemistry, University of São Paulo, USP, 05508-000
****e-mail: rogerio.gariani@udesc.br***

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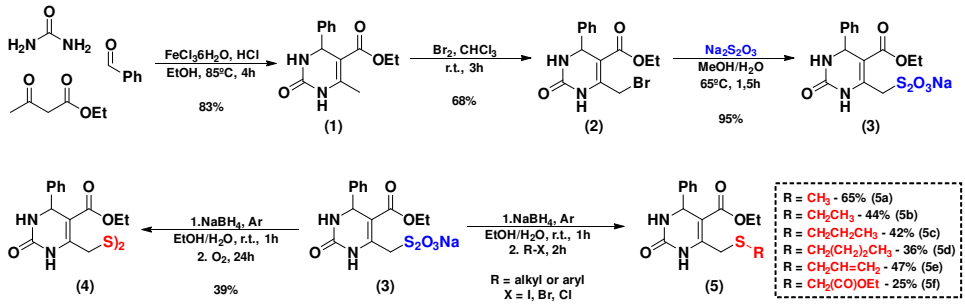
ABSTRACT

The search for sustainable methodologies in synthesizing sulfur-containing organic compounds remains crucial in the chemical industry [1] and various other fields. This study focuses on using Bunte salts as precursors for sulfur-containing derivatives, offering a viable alternative to traditional organometallic methods [2]. Our methodology involves the preparation of Bunte salts from halogenated dihydropyrimidinones in a straightforward procedure. The aim is to synthesize hybrid sulfides and dihydropyrimidinones, leveraging the biological properties of dihydropyrimidinones for potential therapeutic advancements. [3].

Figure 1 – Strategies on the Synthesis of Sulfides and Disulfides from Bunte Salts



During the optimization process, reducing agents, reagent stoichiometry, temperature, solvent, and extraction methods were optimized (Figure 1). All compounds were characterized using NMR and HRMS techniques. This approach circumvents the need for organometallic procedures, offering a promising alternative in the preparation of disulfides and sulfides, in aqueous media. Future research will involve other electrophiles, including Michael acceptors and epoxides, to further elucidate the scope and limitations of the procedures and to prepare a new class of derivatives for new biological prospections. Se-Bunte salts are also under investigation with similar approach, allowing to prepare selelnium-containing derivatives.

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REFERENCES

[1] Trost, B. M., & Fleming, I. (1991). Comprehensive Organic Synthesis: Selectivity, Strategy, & Efficiency in Modern Organic Chemistry. Pergamon Press.
[2] Reeves J. T., Camara K., Han Z. S., Xu Y., Lee H., Busacca C. A., Senanayaka C. H. (2014) The Reaction of Grignard Reagents with Bunte Salts: A Thiol-Free Synthesis of Sulfides Organic Letters 16, 1196-1199.
[3] Kappe, C. O. (2000). "Recent Advances in the Biginelli Dihydropyrimidine Synthesis. New Tricks from an Old Dog." Accounts of Chemical Research, 33(12), 879-888.