Synthesis of Methoxylated Phloroglucinol Derivatives Promoted by Niobium Pentachloride.

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Palavras Chave: *Niobium Pentachloride. Phloroglucinol derivatives, Multicomponent Reaction, Lewis acid.*

Abstract

Phloroglucinol derivatives are an important class of natural compounds, including the rhodomyrtone derivatives. This work describes the synthesis of compounds with similar structure of rhodomyrtosone I by multicomponent reaction between aldehyde derivatives, dihydroresorcinol and 3,5-dimethoxyphenol promoted by niobium pentachloride. This new method is simple, cost-effective, good-yielding, and can be conducted in good reaction times.

Introdução

Phloroglucinol derivatives is an important class of natural products with wide occurrence in plants from Myrtaceae family, as well as in several other families.[1] These compounds are of great interest in medicinal chemistry because they exhibit biological and therapeutic potential applications, such as antibacterial, antimalarial, antiviral, antioxidant, antimicrobial and antileishmanial activities.[2]

Rhodomyrtone A (**1**) and rhodomyrtosone I (**2**) are fused tricyclic phloroglucinol derivatives extracted from Rhodomyrtus Tomentosa.[3] (Figure 1)

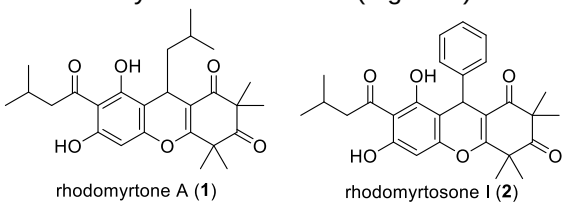
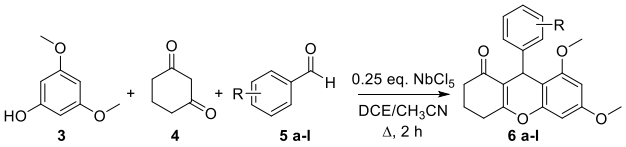


Figure 1. Structures of Rhodomyrtone A (**1**) and rhodomyrtosone I (**2**)

Based on that, and in the objectives of our research group of applying the niobium compounds as catalyst in organic synthesis,[4] this work describe ours studies about the synthesis of Phloroglucinol derivatives, with similar structure of rhodomyrtosone I (**2**), promoted by niobium pentachloride.

Resultados e Discussão

Multicomponent reactions were performed between 3,5-dimethoxyphenol (**3**), dihydroresorcinol (**4**) and aryl aldehyde derivatives (**5a-l**), in the presence of 0.25 eq. of $NbCl_5$, using a anhydrous mixture of DCE/CH_3CN (70:30), as solvent. The reaction mixture was stirred under reflux and N_2 atmosphere, for 2 hours. The products were purified by recrystallization from ethanol and characterized through spectroscopic and spectrometric methods. The results obtained are described in scheme 1 and table 1.



Scheme 1. Synthesis of phloroglucinol derivatives.

Table 1. Results for the synthesis of Phloroglucinol derivatives (**6a-l)**

Aldehyde	R	Yield (%)[a]
5a	H	64 (**6a**)
5b	4-CH_3	57 (**6b**)
5c	4-COOH	53 (**6c**)
5d	4-OCH_3	61 (**6d**)
5e	2-OCH_3	58 (**6e**)
5f	4-OH-3-OCH_3	69 (**6f**)
5g	3-NO_2	55 (**6g**)
5h	4-NO_2	58 (**6h**)
5i	4-Br	52 (**6i**)
5j	2-Br	47 (**6j**)
5k	4-C_6H_5	51 (**6k**)
5l	4-$(CH_3)_2N$	48 (**6l**)

[a] Isolated yield.

Conclusões

In summary, a simple and efficient procedure for the synthesis of methoxylated phloroglucinol derivatives, that present similar structure of rhodomyrtosone I (**2**), was described. The reactions were carried out using 25 mol % of $NbCl_5$ and anhydrous mixture of DCE/CH_3CN (70:30), as solvent, under reflux for 2 hours, providing good yields (47–69 %) of the products.

Agradecimentos

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