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Electrosynthesis of Benzofurans and Benzofuranols derivatives using sacrificial silver electrode

William A. B. Santos[1], Vinicius D. Idiarte[1], Guilherme M. Martins[1,2], Marcos R. Scheide[1], Celso R. Nicoleti[1] and Antonio Luiz Braga[1]*

1) Department of Chemistry, Federal University of Santa Catarina, UFSC, 88040-900
2) Department of Chemistry, Federal University of São Carlos, UFSCar
e-mail: braga.antonio@ufsc.br

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ABSTRACT

Molecules containing oxygenated heterocycles are recognized for their significant biological activities. Benzofurans, in particular, are notable for their presence in compounds with antidepressant, anti-inflammatory, and antitumor activities. Additionally, (*Z*)-2,3-Dihydrobenzofuran-3-ol derivatives are crucial intermediates for the synthesis of aurones, which display a wide range of biological activities.[1,2]

The application of electrosynthetic protocols in organic synthesis allows for more selective reactions, improved atom economy, and a reduction in reaction steps, while also employing less hazardous reagents.[3] Electrosynthesis enable redox transformations, allowing the formation of carbon-carbon (C-C) and carbon-heteroatom (C-heteroatom) bonds through the direct use of electric current to drive chemical reactions.[4] Considering this, we developed an electrosynthetic procedure for the synthesis of oxygenated heterocycles 2-phenylbenzofuran **2** and (*Z*)-2,3-dihydro-1-benzofuran-3-ol **4** derivatives. This method achieved good yields using a silver sacrificial electrode in short reaction times, as illustrated in Figure 1. The reaction mechanism is still under investigation, and further studies, including DFT calculations, will be performed.

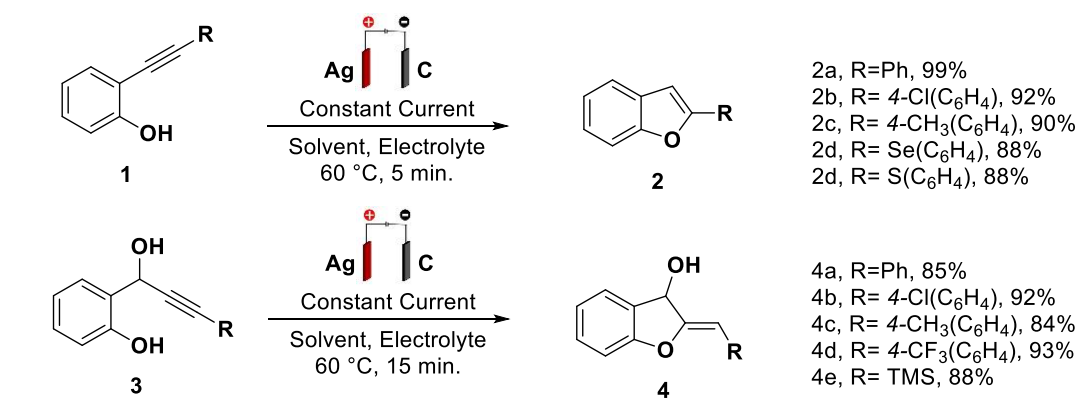

Figure 1. Electrosynthesis of Benzofurans and Benzofuranols derivatives.

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