



# Synthesis of new *N*-confused triazole-porphyrin derivatives through the Heck procedure

Ana T.P.C. Gomes<sup>a</sup>, Fernando C. da Silva<sup>b</sup>, Maria G.P.M.S. Neves<sup>a</sup>, Vítor F. Ferreira<sup>b</sup>, José A. S. Cavaleiro<sup>a\*</sup>

<sup>a</sup>Department of Chemistry and QOPNA, University of Aveiro, 3810-193 Aveiro, Portugal

<sup>b</sup>Departamento de Química Orgânica, Universidade Federal Fluminense, 24020-150 Niterói, RJ, Brazil

\*E-mail: jcavaleiro@ua.pt

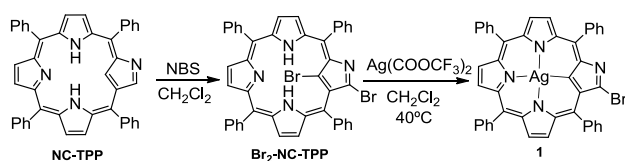
Keywords: *N*-confused porphyrins, triazoles, Heck reaction

## INTRODUCTION

Porphyrins have already demonstrated significant applications in several areas; the one in Medicine (PDT-Photodynamic Therapy of cancer cells) is highly significant.<sup>1</sup> Over the last years, the efforts to develop new methodologies to convert porphyrins into new derivatives, with better structural and spectroscopic characteristics for becoming efficient PDT photosensitizers, have been outstanding.<sup>1</sup> One possibility consists in the coupling of porphyrins to compounds with well-established pharmacological activities.<sup>2</sup> The efficiency of triazoles as antibacterial, antifungal, antiviral and as antitumor agents is well established;<sup>3</sup> so coupling porphyrins to triazoles may lead to new drugs. Recently the synthesis of novel porphyrin isomers, such as *N*-confused porphyrins, has attracted the attention of many chemists.<sup>4</sup> Such compounds have energy absorption bands at wavelengths higher than 700 nm, a good feature for a compound to be used as a photosensitizer in PDT.<sup>1</sup> In this communication we will report our studies on the synthesis of novel *N*-confused triazole-porphyrin derivatives through the Heck procedure.

## RESULTS AND DISCUSSION

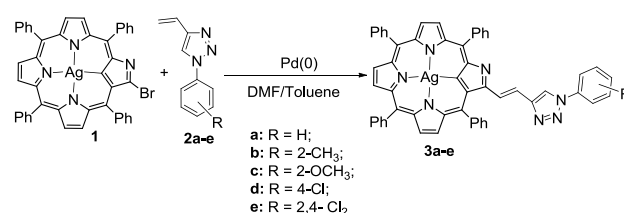
Synthesis of *N*-confused tetraphenylporphyrin (NC-TPP) was achieved *via* condensation of pyrrole and benzaldehyde under methanesulfonic acid catalysis.<sup>5</sup> The Heck reactions were carried out with the silver complex of the mono-brominated NC-TPP (**1**); such complex was prepared, in a good yield, by reaction of NC-TPP with NBS, followed by the silver complexation, (Scheme 1).



**Scheme 1.** Synthesis of mono-brominated *N*-confused tetraphenylporphyrin (**1**).

The Heck reactions of *N*-confused porphyrin **1** with vinyl-triazoles **2a-e** were performed in the presence of Pd(0) (Scheme 2). It was possible to isolate the

new *N*-confused triazole-porphyrin conjugates **3a-e**, in good yields.



**Scheme 2.** Heck reactions between *N*-confused porphyrin **1** and vinyl-triazoles **2a-e**

## CONCLUSION

In this work the Heck procedure has been used to prepare novel *N*-confused triazole-porphyrin conjugates in good yields. These derivatives might exhibit important biological activities, since they combine the photosensitizer properties of the *N*-confused porphyrin group with the biological activity of triazole moieties.

## ACKNOWLEDGEMENTS

Thanks are due to Fundação para a Ciência e a Tecnologia (FCT, Portugal), European Union, QREN, FEDER and COMPETE for funding the QOPNA research unit (project PEst/QUI/UI0062/2011) and the Portuguese NMR Network. Thanks are also due to the Universities of Aveiro and Federal Fluminense and to the FCT/GRICES/CAPES collaborative programme for funding this work. ATP Gomes also thanks FCT for her post-doctoral grant (SFRH/BPD/79521/2011).

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