

## A new synthesis of indolin-3-one derivatives

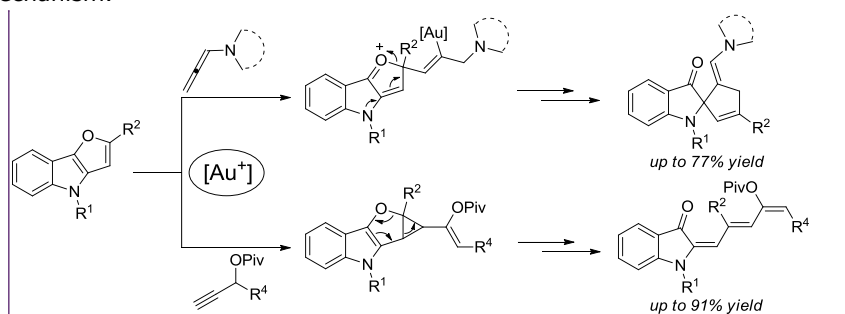
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Indolin-3-one scaffold occur in the core structure of a large number of compounds with pharmaceutical and biological importance. In particular, 2-spirocyclopentane-indolin-3-ones are reported in literature as components of several alkaloids with interesting biological properties or as intermediates for the synthesis of active pharmaceutical compounds [1]. Moreover, they share with the corresponding 2-methylene-indolin-3-ones emergent applications as functional fluorescent dyes [2]. Taking into account these premises and our experiences in the transition metal catalyzed synthesis and functionalization of indole derivatives [3], we decided to explore the reactivity of 4*H*-furo[3,2-*b*]indoles in the presence of gold(I) activated  $\pi$ -systems for the synthesis of new classes of indolin-3-one derivatives. In particular, employing *N*-allenamides or propargylic esters, a careful screening of the gold(I) catalysts allowed for the synthesis of two different classes of indolin-3-ones through gold-promoted cascade sequences involving functionalization at the furan moiety followed by a ring-opening event, Scheme 1. The obtained results will be presented with particular focus on the optimization of catalytic reaction conditions and on reaction mechanism.



**Scheme 1:** indolin-3-ones from 4*H*-furo[3,2-*b*]indole under gold(I) catalysis.

[1] a) R. M. Williams and R. J. Cox, *Acc. Chem. Res.* **36** (2003) 127-139; b) Y. Yu, J. Li, L. Jiang, J.-R. Zhang and L. Zu, *Angew. Chem. Int. Ed.* **56** (2017) 9217-9221.

[2] a) H. Chen, H. Shang, Y. Liu, R. Guo and W. Lin, *Adv. Funct. Mater.* **26** (2016) 8128-8136; L. Wang, J. Fan, X. Qiao, X. Peng, B. Dai, B. Wang, S. Sun, L. Zhang, and Y. Zhang *Journal of Photochemistry and Photobiology A: Chemistry* **210** (2010) 168-172.

[3] For some recent reviews see: a) V. Pirovano, *Eur. J. Org. Chem.* (2018) 1925-1945; b) E. Rossi, G. Abbiati, and V. Pirovano, *Eur. J. Org. Chem.* (2017) 4512-4529.

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