Pyrrole derivatives

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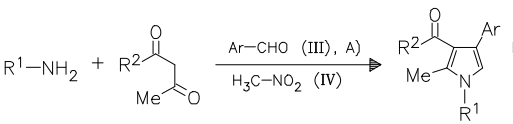
32- 112

Iodine Catalyzed Four-Component Reaction: A Straightforward One-Pot Synthesis of Functionalized Pyrroles under Metal-Free Conditions. — Highly substituted pyrroles are synthesized under metal- and solvent-free conditions by reaction of amines (I), 1,3-dicarbonyl compounds (II), aldehydes (III) and nitromethane (IV). The products can undergo Suzuki and Sonogashira coupling with aryl boronic acids and alkynes. The method is also applicable to prepare optically active pyrrole (S)-(XII) which can be further functionalized as well. — (REDDY, G. R.; REDDY, T. R.; JOSEPH, S. C.; REDDY, K. S.; PAL*, M.; RSC Adv. 2 (2012) 8, 3387-3395, http://dx.doi.org/10.1039/c2ra00982j ; Inst. Life Sci., Univ. Hyderabad, Hyderabad 500 046, India; Eng.) — S. Adam



I II V

A): I_2 (cat.), neat, 90–95°C, [6–8 h]

a R^1: —Bn ; R^2: —Me ; Ar: —Ph 85%

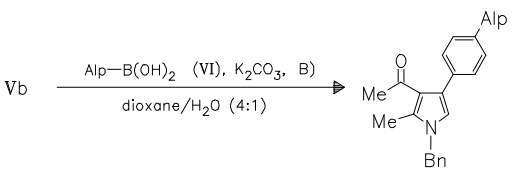
b R^1: —Bn ; R^2: —Me ; Ar:  80%

c R^1:  ; R^2: —Me ; Ar: —Ph 60%

d R^1: —Bn ; R^2: —O—Et ; Ar: —Ph 76%

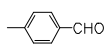
e R^1: —$(CH_2)_2$—Ph ; R^2: —O—Et ; Ar: —Ph 70%

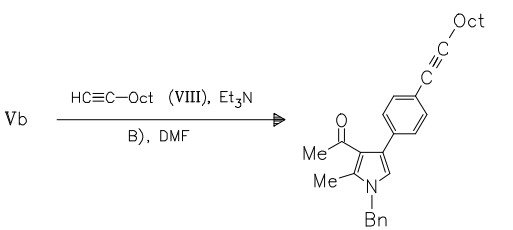
f R^1: —Cy ; R^2: —O—Et ; Ar: —Ph 65%



B): $PdCl_2(dppf)\cdot CH_2Cl_2/PPh_3$ (cat.), 90–95°C

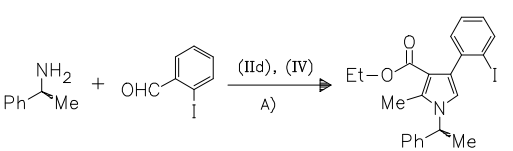
VII 84%

Alp: 



IX 81%

Oct: —$(CH_2)_7$—Me



(S)–X XI (S)–XII 70%