Tunable Synthesis of Quinolinone-fused Isoquinolines through Sequential One-pot Nucleophilic Addition and Palladium-catalyzed Intramolecular C-H Alkenylation

Xue Li,a,b,† Yunyun Bian,a,† Xin Chen,a,b Hang Zhang,a Wei Wang,a Sida Ren,a Xuechen Yang,a Chang Lu,a Chunxia Chen,a,b,* and Jinsong Peng*a

a Department of Chemistry and Chemical Engineering, College of Science, b Material Science and Engineering College, Northeast Forestry University, Harbin, 150040, P. R. China.

† Yunyun Bian and Xue Li contributed equally to this work.

*E-mail: ccx1759@163.com, jspeng1998@163.com

Content

1H NMR and 13C NMR spectra of the products .............................................................. S-2

High-resolution mass spectra of new compounds............................................................ S-66

IR spectra of intermediate 11a ........................................................................................... S-76
(Z)-1-(2-Bromo-1-phenylvinyl)-2-phenylquinolin-4(1H)-one (11a).
9-Methyl-6-phenyl-13H-isoquinolino[2,1-\(a\)]quinolin-13-one (12ab).
11-Methoxy-6-phenyl-13H-isoquinolino[2,1-\(\alpha\)]quinolin-13-one (12ag).
10-Methoxy-6-phenyl-13\textit{H}-isoquinolino[2,1-\textit{a}]quinolin-13-one (12ak).
8-Methoxy-6-phenyl-13\(H\)-isoquinolinolo[2,1-\(\alpha\)]quinolin-13-one (12ak').
8-Chloro-6-phenyl-13H-isoquinolo[2,1-a]quinolin-13-one (12al').
11-Phenyl-5\textit{H}-thieno[2',3';3,4]pyrido[1,2-\textit{a}]quinolin-5-one (12am).
4-(13-Oxo-13H-isoquinolino[2,1-α]quinolin-6-yl)benzonitrile (12fa).
9-(Trifluoromethyl)-6-(4-(trifluoromethyl)phenyl)-13\textit{H}-isoquinolino[2,1-\textit{a}]quinolin-13-one (12\textit{ge}).
6-(2-Chlorophenyl)-13\textit{H}-isoquinolino[2,1-\textit{a}]quinolin-13-one (12ka).
High-resolution mass spectra of new compounds
IR spectra of intermediate 11a