

Supporting Information

Rhodium-Catalyzed Transfer Hydrogenation of Quinoxalines with Water as Hydrogen Source

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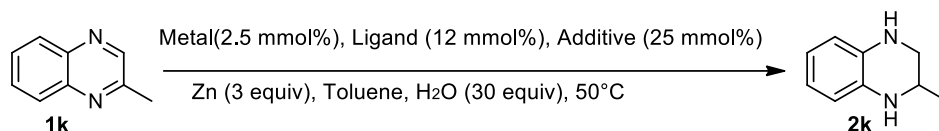
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A: Screening of conditions for the reduction of 2-methylquinoxaline

Table 1. Screening of conditions for the reduction of 2-methylquinoxaline^[a]



Entry	Ligand	Metal	additive	Temp (°C)	Solvent	Time (h)	Yield (%) ^[b]
1	-	[Rh(COD)Cl] ₂	KOH	50	toluene	72	7
2	-	[CP*RhCl ₂] ₂	KI	50	toluene	75	ND
3	Bpy	[CP*RhCl ₂] ₂	KI	50	toluene	102	71
4	(±)BINAP	[CP*RhCl ₂] ₂	KI	50	toluene	75	Trace
5	PPh ₃	[CP*RhCl ₂] ₂	KI	50	toluene	75	Trace
6	1,10-Phen	[CP*RhCl ₂] ₂	KI	50	toluene	83	20
7	DPPP	[CP*RhCl ₂] ₂	KI	50	toluene	75	ND
8	Bpy	[CP*RhCl ₂] ₂	CuI	50	toluene	54	78
9	Bpy	[CP*RhCl ₂] ₂	Bu ₄ NI	50	toluene	63	74
10	Bpy	[CP*RhCl ₂] ₂	KBr	50	toluene	42	58
11	Bpy	[CP*RhCl ₂] ₂	KOH	50	toluene	102	14
12	Bpy	[CP*RhCl ₂] ₂	-	50	toluene	24	78
13	Bpy	[Rh(COD)Cl] ₂	-	50	toluene	54	39
14 ^[c]	Bpy	RhCl ₃	-	50	toluene	54	28
15 ^[c]	Bpy	Rh(CO) ₂ acac	-	50	toluene	54	61
16	Bpy	[CP*RhCl ₂] ₂	-	50	THF	33	23
17	Bpy	[CP*RhCl ₂] ₂	-	50	CH ₃ CN	33	48
18	Bpy	[CP*RhCl ₂] ₂	-	50	DCE	33	23
19	Bpy	[CP*RhCl ₂] ₂	-	40	Toluene	6	86
20	Bpy	[CP*RhCl ₂] ₂	-	60	Toluene	17	80
21	Bpy	[CP*RhCl ₂] ₂	-	25	Toluene	18	87

^[a] Reaction conditions: **1k** (0.2 mmol), Metal (0.005 mmol), Zn (3 equiv), Ligand (0.024 mmol), Additive (0.05 mmol), H₂O (30 equiv) in toluene (2 mL) under argon atmosphere at indicated temperature for indicated time. ^[b] Isolated Yields. ^[c] Metal (0.01 mmol) was used. ND = Not Determined

B: NMR Spectra of Products