

Convenient Synthesis of Triphenylphosphanylidene Spiro[cyclopentane-1,2'-indenes] via Three-Component Reactions

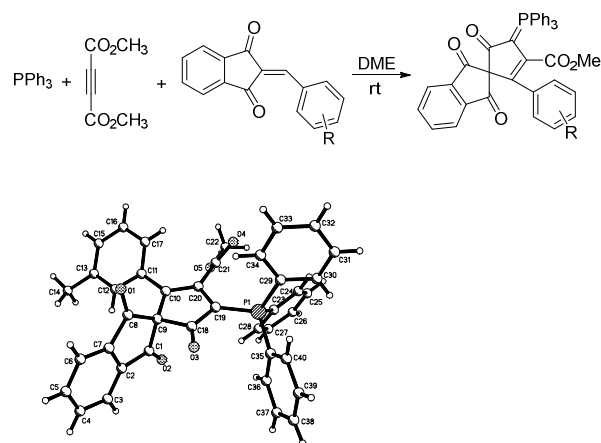
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Three-component reactions of triphenylphosphine, but-2-yne-1,3-diol, and 2-arylidene-1,3-indandiones in dimethoxyethane resulted in methyl 1',3',5-tri-oxo-2-phenyl-4-(triphenylphosphanylidene)-1',3'-dihydrospiro[cyclopentane-1,2'-inden]-2-ene-3-carboxylate in satisfactory yields with mild conditions and simple operation methods.

Entry	Compd	R	Yield (%) ^b
1	1a	p-OCH ₃	75
2	1b	p-CH ₃	73
3	1c	p-NO ₂	70
4	1d	P-	85
5	1e	C(CH ₃) ₂ m-OCH ₃	69
6	1f	m-Cl	62
7	1g	m-F	65
8	1h	m-NO ₂	72

Table 1. Three-Component Reaction for Spiro[cyclopentane-1,2'-indenes] **1a-1h**^a



^aReaction conditions: DMAD (1.2 mmol), 2-arylidene-1,3-indandiones (1.0 mmol), PPh₃ (1.0 mmol) in DME (10.0 mL), 0–rt, 2 h. ^bIsolated yields.