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Title:	Bidentate ligand 8-aminoquinoline-aided Pd-catalyzed diastereoselective β -arylation of the prochiral secondary sp ³ C-H bonds of 2-phenylbutanamides and related aliphatic carboxamides
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Keywords:	Aliphatic carboxamides C-H activation/arylation Diastereoselectivity Palladium
Issue Date:	2015
Publisher:	Elsevier Ltd
Citation:	Tetrahedron, 71(43)
Abstract:	Investigations on the Pd-catalyzed 8-aminoquinoline-aided diastereoselective β -arylation of the prochiral 2° sp ³ C-H bonds of various aliphatic carboxamides having substituents at the α - or γ -positions are reported. The Pd-catalyzed β -arylation of the 2° sp ³ C-H bonds of racemic 2-phenylbutanamides with aryl iodides gave the arylated products (\pm)-3a-l (anti isomers) with moderate to good diastereoselectivities (dr up to 86:14). Next, the Pd-catalyzed β -arylation of various γ -substituted aliphatic carboxamides with aryl iodides furnished the corresponding C-H arylated products with poor diastereoselectivities. Then, the arylation of the C(β)-H bonds of 2-ethyl-N-(quinolin-8-yl)butanamide possessing two prochiral centers with aryl iodides successfully furnished the bis arylated products meso-8eA-hA and (\pm)-8eB-hB (diastereomers). The arylation of (S)-2-phenylbutanamide also gave the corresponding enantiomerically enriched compounds 10a-c (anti isomers). The stereochemistry of the products (\pm)-3a-l (major isomers), meso-8eA-hA (major isomers), (\pm)-8eB-hB (minor isomers) and enantiomerically enriched compounds 10a-c (major isomers) were assigned based on the X-ray structures of the major isomers 3b,c,e,l, 8eA, 10c and minor isomers 8eB and 8fB. The limitations and outcome of the stereocontrol in the Pd-catalyzed C-H arylation reactions involving aliphatic carboxamides are illustrated.
URI:	https://www.sciencedirect.com/science/article/pii/S004040201530003X (https://www.sciencedirect.com/science/article/pii/S004040201530003X) http://hdl.handle.net/123456789/2743 (http://hdl.handle.net/123456789/2743)
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