Title:	Bidentate ligand 8-aminoquinoline-aided Pd-catalyzed diastereoselective β-arylation of the prochiral secondary sp3 C-H bonds of 2-phenylbutanamides and related aliphatic carboxamides
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Abstract:	Investigations on the Pd-catalyzed 8-aminoquinoline-aided diastereoselective β-arylation of the prochiral 2° sp3 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° sp3 C–H bonds of racemic 2-phenylbutanamides with aryl iodides gave the arylated products (±)-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 (±)-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 (±)-3a–l (major isomers), meso-8eA–hA (major isomers), (±)-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.
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