New palladium (II) complexes containing phosphine-nitrogen ligands and their use as catalysts in aminocarbonylation reaction

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Aminocarbonylation of aryl halides, homogeneously catalysed by palladium, is an efficient method that can be employed for obtaining amides for pharmaceutical and synthetic applications. In this work, palladium (II) complexes containing P^N ligands were studied as catalysts in the aminocarbonylation of iodobenzene in the presence of diethylamine. Two types of systems were used: a palladium (II) complex formed in situ; and one prepared prior to the catalytic reaction. In general, the palladium complexes studied achieved high conversions in an average reaction time of less than 2 hr, which is less than that for the standard system (Pd (II)/PPh 3) used. The pre-synthesized complexes were faster than their in situ counterparts, as the latter require an induction time to form the Pd/P^N species. The structure and electronic properties of the ligand P^N can influence both the activity and the selectivity of the reaction, stabilizing the acyl-palladium intermedi