

Oxidation of Benzyl diazines and Benzyl(iso)quinolones

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DESCRIPTION

The methylene radical of varied substituted 2- and 4-benzylpyridines, benzyl diazines and benzyl (iso) quinolones was with successfully oxidized to the corresponding chemical group ketones using a copper or iron catalyst and molecular oxygen because of the ratio oxidizer. Application of the protocol in API synthesis is exemplified by the synthesis of a precursor to the antiprotozoal drug Mefloquine. The chemical reaction technique also can be accustomed prepare metabolites of genus *Apis* that is illustrated for the natural product muscle relaxant. ICP-MS analysis of the refined reaction product disclosed that the bottom metal impurity was well below the regulative limit. The direct chemical reaction of C (sp³)-H bonds may be a quick technique to convert unreactive substrates for organic synthesis like alcohols, ketones, aldehydes and radical acids. Classical chemical reaction protocols have confidence in the utilization of (super) stoichiometric quantities of oxyanions of toxicant metals like Mn (VII) and Cr (VI).[1-3]

The number of these oxidants manufacture and limitations on their use by new legislation has prompted scientists to go looking for additional property chemical reaction ways. The utilization of transition metal or organocatalysis together with molecular oxygen received a good deal of attention from the scientific community. Molecular oxygen is taken into account to be the greenest oxidizer obtainable and it's already widely used by the artefact industry. However, once watching the preparation of additional complicated molecules, typical for fine chemicals, the utilization of aerobic oxidations is an additional exception than the norm. This can be partly due to the restricted artificial scope and property of the obtainable chemical reaction ways. Additional analysis into selective and gentle aerobic oxidations is thus of significant importance. Of area unit the transition metal and organocatalyzed oxidations of activated methylenes like in chemical group methylenes or their heteroaromatic analogues. Due to the activation, the formation of the corresponding ketones and aldehydes become possible underneath gentle conditions. Oxidations of this type victimization Oxone[®], NaOCl, or particularly peroxides because the terminal oxidizer area unit is quite varied. Ishii showed that organocatalysts like N-hydroxyphthalimide (NHPI) together with

molecular oxygen may be accustomed perform chemical group oxidations.

The aerobic copper-catalyzed α -oxygenation of 2-arylthioacetamides was reportable by Moghaddam. During this transformation CuCl₂ and K₂CO₃ in DMF were accustomed. The coupling of 2-arylacetaldehydes with anilines leading to the formation of 2-aryl- α -ketoacetamides. A motivating Cu-catalyzed chemoselective aerobic C-C bond cleavage of methyl ketones was reportable by the group of Liu and metallic element. This convenient transformation makes use of CuI/O₂ in DMSO to convert methyl radical ketones into aldehydes. Recently our cluster reportable an artificial protocol for the copper and iron-catalyzed aerobic chemical reaction of the methylene radical of aryl(di)azinylmethanes victimization ethanoic acid as a promotor. The ensuing ketones area unit terribly valuable as they're intermediates within the synthesis of a spread of prescription drugs like the antiprotozoal drug antimalarial drug (Lariam[®]), the medicament Acrivastine, the β 2-adrenergic agonist Rimiterol and therefore the anxiolytic Bromazepam. What is more, they will even be accustomed synthesize the first and ordinal generation antihistamines Carbinoxamine, Bepotastine and Triprolidine through an alternate artificial route. Additionally, to those artificial examples, it's been shown by Kamijo that 4-benzylpyridines will act as economical organocatalysts within the photoinduced chemical reaction of secondary alcohols.

Recently some scholars disclosed an alteration to reaction conditions to additional extends the substrate scope. Alkyl group chloroacetate was used because the promotor rather than ethanoic acid, permitting the authors to in addition oxidize less reactive alkyl-substituted pyridines. The office showed that NH₄I also can be used as an associate organocatalyst together with AcOH to facilitate the chemical reaction of benzylpyridines to benzylpyridines [4]. Once commutation O₂ for Na₂S₂O₈ chemoselective methylenation occurred over the natural process of the group with DMA acting as a one-carbon supply. An alternate technique to synthesize picolinic amides from picolines and ammonia acetate or amines employing a similar chemical reaction protocol was at the same time projected by the Deng and rule. In communication, we have a tendency to provide a reaction scope of phenyl-substituted 2-benzylpyridines and

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showed that each; electron-withdrawing and donating group's area unit is well tolerated. The results in addition indicated that either metallic element or metallic element catalysts (CuI and $\text{FeCl}_2 \cdot 4\text{H}_2\text{O}$) worked equally well for this substrate category. Within the framework of this work the regioisomeric 4-benzylpyridines victimization $\text{FeCl}_2 \cdot 4\text{H}_2\text{O}$ because of the catalyst [5]. Underneath the quality conditions antecedently developed for 2-benzylpyridines these substrates swimmingly modify giving the corresponding ketones moderate to sensible yields. Additionally, during this case, electron-donating additionally as electron-withdrawing substituents on the phenyl ring area unit well tolerated and their electronic properties have very little influence on the yield of the reaction. Even substituents that area unit sensitive to a chemical reaction like NH_2 (2b) and SMe (2c) seem to be no downside though the reaction product was isolated in slightly lower yields.

REFERENCES

1. Su B, Bunescu A, Qiu Y, Zuend SJ, Ernst M, Hartwig JF. Palladium-catalyzed oxidation of $\beta\text{-C}$ (sp^3)-H bonds of primary alkylamines through a rare four-membered palladacycle intermediate. *J Am Chem Soc.* 2020;142(17): 7912-7919.
2. Liu B, Romine AM, Rubel CZ, Engle KM, Shi BF. Transition-metal-catalyzed, coordination-assisted functionalization of nonactivated $\text{C}(\text{sp}^3)\text{-H}$ bonds. *Chemical Reviews.* 2021;121(24): 14957-15074.
3. Zhang H, Sun MC, Yang D, Li T, Song MP, Niu JL. Cobalt(II)-catalyzed activation of $\text{C}(\text{sp}^3)\text{-H}$ Bonds: Organic oxidant enabled selective functionalization. *ACS Catalysis.* 2022;12(3): 1650-1656.
4. Yu Y, Ma L, Xia J, Xin L, Zhu L, Huang X. A modular approach to dibenzo-fused ϵ -Lactams: Palladium-catalyzed bridging-C-H activation. *Angewandte Chemie.* 2020;132(41): 18418-18423.
5. Kaur M, Garg S, Malhi DS, Sohal HS. A Review On Synthesis, Reactions And Biological Properties Of Seven Membered Heterocyclic Compounds: Azepine, azepane, azepinone. *Curr Org Chem.* 2021;25(4): 449-506.