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CONTENTS

Advances in Contemporary Research

87 Asymmetric Henry reaction catalysed by transition metal complexes: A short review

The asymmetric Henry reaction products, chiral nitroaldols find increasing applications in the pharmaceutical industry. Transition metal complexes catalyse the asymmetric Henry reaction efficiently and in most of the cases give the product chiral nitro alkanols in good yield and enantiomeric excess. This short review summarizes the reported remarkable transition metal complex catalysts for asymmetric Henry reaction, their advantages, limitations, mechanism for their catalytic activity and the challenges that need to be addressed in this research area.

\[
\begin{align*}
\text{phenyl acetaldehyde} + \text{CH}_3\text{NO}_2 & \xrightarrow{\text{chiral ligand}} \text{phenyl nitro derivative} \\
\end{align*}
\]

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Papers

109 Synthesis and in vitro cytotoxicity of 2-substituted 17-methylene/17-ß-methyl estratrienes

Synthesis of various types of 17-methylene estratrienes and 17-ß-methyl estratrienes containing 2-arylaminomethyl/2-alkylaminomethyl units, and their in vitro antiproliferative effects on human cancer cell lines are reported.

Ganapathy Panchapakesan, Radhakrishnan Sureshbabu, Dhatchana Moorthy Nachiappan & Arasambattu K Mohanakrishnan*

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122 An efficient one pot conversion of alkynes to bis(indoly1) and bis(pyrrolyl)alkanes in aqueous ethanol

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\text{Ph} = \text{HgCl}_2 \text{ in ethanolic water}
\]

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129 One-pot synthesis of 3-substituted indole derivatives using moisture stable, reusable, and task specific ionic liquid catalysts

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Synthesis and antimicrobial activity of novel 1,5-benzodiazepines

A simple and efficient method for the synthesis of (4-methyl-1,5-dihydro-1,5-benzodiazepin-2-ylidene)-aryl-amine using $o$-phenyl-enediamine and acetoacetanilide catalysed by CdCl$_2$ under thermal as well as MWs has been reported. The compounds show good antibacterial and antifungal activities.

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Notes

Ecofriendly bromination of chalcones and synthesis of flavones using grinding technique

Selective bromination of chalcones and 2'-hydroxychalcones has been carried out with ammonium bromide and ammonium persulphate using grinding technique at RT under aqueous moist condition to give $\alpha,\beta$-dibromochalcones and $\alpha,\beta$-dibromo-2'-hydroxychalcones respectively. $\alpha,\beta$-Dibromo-2'-hydroxychalcones have been cyclodehydrobrominated with barium hydroxide moist with ethanol at RT to give flavones using grinding technique.

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146 Studies of intramolecular nitrone-alkene cycloaddition reaction: Regio- and diastereoselective synthesis of chlorinated isoxazolidines

A number of stable nitrones have been prepared. The intramolecular cycloaddition reaction of these nitrones in boiling xylene leading to regio- and diastereoselective formation of chlorinated isoxazolidines in 81-93% yields have been reported.

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153 Rapid access of some trisubstituted imidazoles from benzil condensed with aldehydes and ammonium acetate catalyzed by L-cystein.

A simple highly versatile and efficient synthesis of 2,4,5-trisubstituted imidazole is achieved by three component cyclocondensation of benzil, substituted aromatic aldehyde and ammonium acetate by L-cystein as organocatalyst under solvent free condition. The key advantages of this process are high yields, cost effectiveness catalyst, easy purification technique and above all environmentally benign.

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160   **Synthesis and biological screening of some novel 2-(2-benzisoxazol-3-yl) ethyl)-1H-benzimidazoles**

The title compounds 3a-f are synthesized by the reaction of substituted 1,2-benzisoxazole-3-propionic acid 1a-f with o-phenylenediamine 2 in aqueous alcohol and evaluated for antimicrobial activity.

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164   **AM1 study of the electronic structure of zwitterions of Ampicillin**

The conformation and electronic structure of zwitterions of ampicillin have been optimized and calculated by semi-empirical molecular orbital AM1 method. The mechanism of formation of zwitterions of Ampicillin has been studied by comparison of the different positions of net charges on nitrogen atoms in the molecule. In this connection, the heats of formation (ΔH_f), dipole moment (µ), full atomic charges and energies of frontier molecular orbitals (E_HOMO and E_LUMO) have been performed and discussed. The effect of conformational changes and electronic properties of stable conformations have been determined. Further, the utility of theoretical predictions is important for evaluating the ability to cross cell wall barriers and binding to serum proteins.

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