

Industrial Chemistry 2017: Small organic molecules as catalysts for asymmetric direct aldol reactions in aqueous media: A green chemistry approach for industrial applications - Kartick C Bhowmick

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As organocatalysis in watery media is one of the most engaged zones of exploration field in deviated combination. Awry carbon-carbon bond shaping responses involve the focal region in the field of hilter kilter natural blend where aldol response is the immensely examined one. A wide scope of savvy natural materials, including proline and its subordinates have been end up being effective impetuses for lopsided aldol responses. As of late, more consideration has been paid to create organocatalysts for the deviated direct aldol responses in water since it gives some remarkable properties, which incorporate huge strong vitality thickness, high surface pressure, hydrophobic impact and in particular it is naturally generous dissolvable. The improvement of hilter kilter organocatalyzed direct aldol responses in watery media, for instance, a little organocatalyst, L-Proline hydrazide has been utilized for direct lopsided aldol response of different ketones with fragrant aldehydes at room temperature in nearness of a few corrosive added substances. A stacking of 10 mol% of the impetus and p-toluenesulphonic corrosive as added substance was utilized in this response, and great yields (up to 99%), with high enemy of/syn diastereoselectivities (up to 95:5) and enantioselectivities (up to >99.9%) could be accomplished in fluid media. Another new organocatalyst, got from 4-hydroxy-L-proline and abietic corrosive was utilized for aldol responses between subbed fragrant aldehydes and different ketones in nearness of a few corrosive added substances in watery media. The comparing aldol items were gotten in high confined yields (up to 99%) with high enemy of diastereoselectivities (up to 94%) and enantioselectivities (>99.9%). The impetus stacking was decreased to as low as 1 mol% just and essentially, the aldol responses were seen as incredibly quick in water. Notwithstanding the improvement of the above organocatalysts, the impact of a few corrosive added substances was researched in awry direct aldol response catalyzed by a C2-symmetric organocatalyst in watery media.

A progression of profoundly effective organocatalysts have been gotten from normally accessible amino acids for completing enantioselective direct aldol response in both natural and watery medium. The aldol items were acquired in high diastereoselectivities (up to 99:1) and enantioselectivities (up to >99% ee) for a more extensive scope of substrates utilizing 1 mol % of an impetus. The outcomes show that the auxiliary highlights of organocatalysts assume a vital job in getting high optical virtue of aldol adducts in a watery medium. Further, the job of water in expanding the rate and enantioselectivity of the response has been outlined. Additionally, the aldol items have been utilized in the blend of chiral amino alcohols which go about as helpful intermediates for working up complex normal items.

research focus on the development of asymmetric organocatalysis for carbon-carbon bond-forming reactions in aqueous media. His research on the development of small organic molecules as organocatalysts for direct aldol reaction impacted significantly in the field of asymmetric organocatalysis. He has developed many optically pure organic molecules which efficiently catalyzed the direct aldol reactions with great yield and selectivity in aqueous media. His newly developed methodology replaced the use of volatile organic solvents and hazardous metal catalysts in asymmetric aldol reactions, thus by contributing enormously towards the development of sustainable organic synthesis

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