



## Sustainable Cs<sub>2</sub>O/ZrO<sub>2</sub> Oxide Catalyst for the Synthesis of 1,4-Dihydropyridine Analogues

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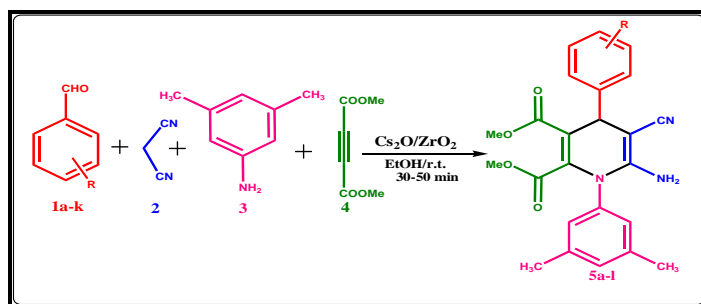
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### ABSTRACT

Cesia loaded on zirconia (Cs<sub>2</sub>O/ZrO<sub>2</sub>) was prepared as heterogeneous catalyst for the synthesis of 1,4-dihydropyridine analogues via a one-pot, multi-component reaction involving substituted aldehyde, malononitrile, dimethylaniline and dimethylacetylene dicarboxylate with good to excellent product yields (83 to 97%). The notable benefits of the facile approach with ethanol as solvent are excellent yields and short reaction times. Catalyst is fully reusable with minor loss of activity up to six cycles. While, P-XRD, TEM and SEM analysis performances were revealed for the structural interpretation of Cs<sub>2</sub>O/ZrO<sub>2</sub>, the identity of products were established and confirmed by various spectral (<sup>1</sup>H NMR, <sup>13</sup>C NMR, FT-IR and HRMS) techniques.

### Graphical Abstract



Model reaction

**Keywords:** Malononitrile, Cs<sub>2</sub>O/ZrO<sub>2</sub> heterogeneous catalyst, Multi component reaction.