

Ni-doped Zinc Oxide as an Effectual Catalyst for the Synthesis of Substituted Benzimidazoles from o-Phenylene Diamine and Aldehydes at Room Temperature and their Biological Activity

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Abstract: Ni-doped Zinc oxide has been used as a reusable green catalyst in the search for a more environmentally friendly way to synthesize substituted Benzimidazoles. At normal temperature, a reaction between 1, 2-diamine and a suitable aldehyde yielded several substituted benzimidazole moieties. The reaction is carried out in an agate pestle mortar under solvent-free, moderate conditions, yielding a high yield (90-99 percent) in a much shorter time (3-8 min.). The formation of the chosen product was verified by spectral data and physical constants. Antimicrobial activity of synthesized benzimidazoles was also tested, and they were shown to be considerably active against a variety of gram positive and gram negative bacteria, as well as certain fungi.

Keywords: Solvent free, Ni-doped ZnO Catalyst, Short reaction time, Benzimidazole, o-phenylene diamine, Aromatic aldehydes, green synthesis, antimicrobial activity.

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