Review of: "A Novel One-Pot Three-Component Approach to Orthoaminocarbonitrile Tetrahydronaphthalenes Using Triethylamine (Et_3N) as a Highly Efficient and Homogeneous Catalyst Under Mild Conditions and Investigating Its Anti-cancer Properties Through Molecular Docking Studies and Calculations"

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Potential competing interests: No potential competing interests to declare.

This study developed an efficient and eco-friendly method for synthesizing ortho-aminocarbonitrile tetrahydronaphthalene derivatives using triethylamine (Et3N) as a homogeneous catalyst under mild conditions. The method offers several key advantages, including high product yields of 87–98%, very short reaction times (10–25 minutes), simple workup, and the use of ethanol as a solvent. Additionally, it requires minimal catalyst loading and does not demand specialized equipment, making it a significant contributor to green chemistry practices.

Furthermore, all synthesized compounds bind to an agonist at the active site of the 3A8P protein, leading to its inactivation and potentially providing therapeutic benefits in cancer treatment. The ligands in these compounds form hydrogen bonds with leucine A:728 residues, a key interaction with special relevance to biological and pharmaceutical fields. Studies indicate that these compounds hold promise as prospective oral anti-cancer agents.

However, this method also has some limitations. First, the compounds' effectiveness is focused on a specific protein (3A8P) and relies on interactions with the particular leucine A:728 residue, which could limit broader applications across other proteins or diseases. Second, the study's scope is restricted to cancer treatment, suggesting a need for further research to confirm these compounds' potential in other medical or biological areas.