Objective: In this study, a simple triethylammonium salt of phosphoric acid (triethylammonium dihydrogen phosphate) (4) in the liquid state was utilized as an inexpensive, efficient one-pot three components, solvent-free synthesis of thiazolidine-4-one derivatives, with good to excellent yields. Techniques such as FT-IR, 1H-NMR, 13C-NMR,13C-NMR-DEPT-135, and MS. were used for the structural elucidation. The high biotic efficiency of the newly obtained compounds was confirmed by in vitro antimicrobial action against Gram-positive (S. Aureus), Gram-negative bacteria (P. Aeruginosa and E. Coli) and antifungal activity (C. Albicans) via microplate titer dilution technique. Finally, a molecular docking study was performed with a resolved crystal structure of S. Aureus D-alanine alanyl carrier protein ligase (PDB ID: 7VHV). This investigation aimed to synthesize a new series of thiazolidine-4-one derivatives combined with benzoxazole moiety.

Material and method: Ionic liquid assistance one-pot solvent-free synthesis method used to synthesize a new series of thiazolidine-4-one derivative (10a-e).

Results: Structural identification of new synthesis and biological evaluation via techniques of (IR, 1H-NMR, 13C-NMR, 13C-NMR-DEPT-135, and MS).

Conclusion: Ionic liquid is utilized as an inexpensive, efficient one-pot three-component solvent-free synthesis of thiazolidine-4-one derivatives with good to excellent yields. Most of the synthesized compounds showed high biological and anti-fungal activity, in line with the docking study against mentioned microorganism and crystal structure of PDB (ID: 7VHV), respectively.

**Keywords:**[ionic liquid](https://www.eurekaselect.com/search?searchvalue=ionic%20liquid), [one-pot synthesis](https://www.eurekaselect.com/search?searchvalue=one-pot%20synthesis), [solvent free](https://www.eurekaselect.com/search?searchvalue=solvent%20free), [characterization](https://www.eurekaselect.com/search?searchvalue=characterization), [biological activity](https://www.eurekaselect.com/search?searchvalue=biological%20activity), [docking.?ionic liquid](https://www.eurekaselect.com/search?searchvalue=docking.?ionic%20liquid" \t "_blank), [docking.?](https://www.eurekaselect.com/search?searchvalue=docking.?)