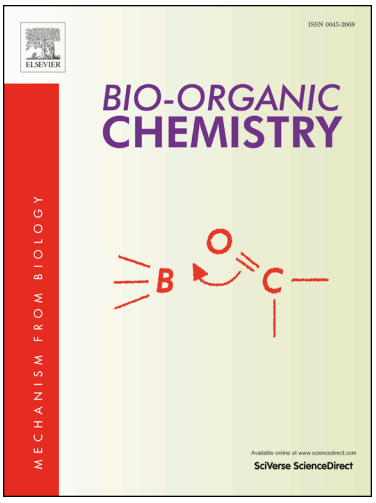

An eco-friendly catalytic system for multicomponent, one-pot synthesis of novel spiro-chromeno indoline-triones and their anti-prostate cancer potentials evaluated via alkaline phosphatase inhibition mechanism

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An eco-friendly catalytic system for multicomponent, one-pot synthesis of novel spiro-chromeno indoline-triones and their anti-prostate cancer potentials evaluated via alkaline phosphatase inhibition mechanism

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Abstract

A green and efficient straightforward tactic for the one-pot regioselective synthesis of novel 10,10-dimethyl-9,10,11,11a-tetrahydro-6H-spiro[chromeno[4,3-b]chromene-7,3'-indoline]-2',6,8 (7aH) -triones (**4a-n**) in one-pot modus has been established using eco-friendly *p*-toluenesulphonic acid as catalyst. Among the solvents that were used for synthesis, **4a-n** were suitably synthesized with maximum yield (90-98 %) in water. We avoided column purification and the formed by-product in the process is environmental-friendly. Hence, this reaction may consider as an astonishing piece work in this study, why because, the reaction mechanism that depends on the nature of the group attached to the isatin ring nitrogen atom. The main advantage of this protocol includes short reaction time, good yield, easy to work-up, practical simplicity, high regioselectivity and reduced pollutant, cost and avoids tedious purification. These pharmaceutically important compounds (**4a-n**) were recognized for their alkaline phosphatase inhibition and prostate cancer medication capabilities. The selective activity relation between alkaline phosphatase and prostate cancer was unveiled through the interaction of **4a-n** to Human alkaline phosphatase (PDB ID: 1EW2).

Keywords: Green synthesis; Molecular Docking; Alkaline phosphatase; Prostate Cancer; SAR; Spirooxindole