

Synthesis of Novel 2,4-Thiazolidinedione Derivatives and Study of their Various Activities

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Abstract: *The synthesis and antimicrobial activity of 2,4-thiazolidinedione derivatives were investigated. Thiazolidinediones are synthetic agonists for various transcription factors, such as peroxisome proliferator-activated receptor gamma (PPAR- γ). This suggests that the synthesized derivatives may exert their antimicrobial activity through interactions with PPAR- γ or other related pathways. Further studies are warranted to elucidate the exact mechanisms underlying the antimicrobial properties of these derivatives and their potential interaction with transcription factors like PPAR- γ . The 2,4-thiazolidinedione derivative exhibits a variety of biological activities, including antibacterial, anti-inflammatory, antitumor, anticonvulsant, and cardiotoxic activities. Additionally, it shows promising anti-diabetic activity, which is particularly noteworthy given the growing prevalence of diabetes worldwide. These diverse pharmacological properties highlight the potential of 2,4-thiazolidinedione derivatives as versatile therapeutic agents for addressing a range of medical conditions. Further research into the mechanisms underlying these activities can help in optimizing the development of these derivatives for clinical use. The 2,4-thiazolidinedione was synthesized by thiourea and chloroacetic acid in presence of conc. Hydrochloric acid.*

Keywords: 2, 4-thiazolidinedione, antimicrobial activity