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Influence study of catalysts and solvents on the synthesis of 5,5-diphenyl-2-thiohydantoin

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Abstract : Heterocyclic nitrogen compounds such as phenytoins or hydantoins and thiohydantoins are bioactive molecules which have often aroused research infatuation both in terms of synthesis and in terms of the study of their properties and applications in various fields such as pharmacy, biology, organic synthesis or industry. In the aim to enhance the Blitz's reaction, 5,5-diphenyl-2-thiohydantoin (DPTH) was synthesized by condensation of benzil with thio-urea, in alkaline solution. Benzil was synthesized from benzaldehyde through benzoin condensation. A variety of catalysts and solvents have been explored in the synthesis of DPTH. The structures of compounds obtained have been elucidated using spectral data (^{1}H NMR and ^{13}C NMR) and their melting point. The best reaction yields (83 to 93%) were obtained for DPTH in absolute alcohol in the presence of strongly basic media but with the glycol-thioureid. The mixtures of NaOH/aniline and aniline/H_2SO_4 produced only the DPTH (79 and 67% respectively) without other product. Syntheses with mixtures of catalysts are also interest in terms of stereospecificity.
Key-words : Synthesis, benzil, 5,5-diphenyl-2-thiohydantoin, catalyst influence, Biltz reaction.

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