Heterocyclic Thiophenes Containing Azo Group: New Class of Drugs for Treating Fungal Infections

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The synthesis of substituted 2-aminothiophenes is attractive to chemical researchers as they are important intermediates in organic synthesis and frequently used as the scaffold motif of a variety of agrochemicals, dyes, and biologically active products. There is a clear need to develop new antifungal agents as therapeutic alternatives for the control of fungal infections. In this context, compounds derived from heterocyclic thiophenes containing azo group have emerged as promising antifungal drugs, some of which have become commercially available as Ertaczo, Dermofix etc.

In this study, we have synthesized the heterocyclic thiophenes containing azo compounds; 2-((2,5-dioxoimidazolidin-4-yl)diazenyl)-6-methyl-4,5,6,7-tetrahydrobenzo[b]thiophene-3-carbonitrile (Fig.1) and 2-((2,5-dioxoimidazolidin-4-yl)diazenyl)-6-ethyl-4,5,6,7-tetrahydrobenzo[b]thiophene-3-carbonitrile, and investigated their molecular structure by using elemental analysis, FT-IR, $^1$H NMR, $^{13}$C NMR and UV-vis. The geometry optimization and spectral calculations were performed by using DFT/B3LYP/6-311G(d,p) basis set in Gaussian 09 program. And also, theoretical $^1$H and $^{13}$C NMR shifts (as δ, ppm) were calculated by this quantum set.

References
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