

Abstract

The present study offers a thorough investigation into the synthesis and structural analysis of new alkyl halide compounds with a modified benzoic moiety. Esterification, hydrazide production, triazole synthesis, and the synthesis of the target alkyl halide molecule were some of the significant processes that made up the approach. The synthesis procedure was methodically carried out, and the resultant compounds were rigorously structurally analyzed using a variety of spectroscopic methods. In this work, a new 4H-1,2,4-triazole derivative called "3-((3,4-dichlorobenzyl) thio)-5-(4-methoxyphenyl)-4-(4-nitrophenyl)-4H-1,2,4-triazole" was synthesized and characterized, and its structural characteristics were interpreted using ¹H-NMR and ¹³C-NMR spectroscopy. The results of this study not only aid in the synthesis of new compounds but also offer insightful knowledge regarding their structural properties. The spectroscopic examinations, such as ¹H-NMR and ¹³C-NMR, provide a thorough comprehension of the chemical surroundings and connections of the atoms inside the synthesized compounds.