

# ABSTRACT

The contemporary research project was initiated by the preparation of the parent compound 4-ethyl-5-(4-methoxyphenyl)-4*H*-1,2,4-triazole-3-thiol (**7**) through the reaction of 4-methoxybenzohydrazide (**4**) with ethyl isothiocyanate (**5**). This compound was further treated with 1-(chloromethyl)-4-fluorobenzene (**8**) in the presence of lithium hydride, which worked as an activator to achieve 4-ethyl-3-((4-fluorobenzyl)thio)-5-(4-methoxyphenyl)-4*H*-1,2,4-triazole (**9**). The elucidation of the novel molecule's structure was accomplished through the utilization of various spectroscopic techniques, including <sup>1</sup>H-NMR and <sup>13</sup>C-NMR. Notably, triazoles belong to the class of compounds with intriguing chemical properties that have found a wide array of pharmacological applications. These applications encompass their role as potential agents in the fields of antibacterial, anticancer, anti-inflammatory, anticonvulsant, antioxidant, antimicrobial and antifungal activities, as well as their capacity to function as inhibitors for various enzymes.