



Indian Journal of Chemistry  
Vol. 63, November 2024, pp. 1130-1140  
DOI: 10.56042/ijc.v63i11.13199



# Synthesis and characterization of some novel *N*-substituted derivatives of 3-(benzo[*b*]thiophen-2yl)-5-(4-(substituted) phenyl)-4,5-dihydro-1*H*-pyrazole and its pharmacological studies

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Received 16 August 2024; accepted (revised) 22 October 2024

A new series of *N*-substituted pyrazoline derivatives bearing 2-chloro acetyl **3a-g** and benzimidazole thioether moiety **4a-g** have been synthesized from substituted benzaldehyde and 2-acetyl benzo thiophene through chalcones, followed by the cyclisation with hydrazine hydrate, acylation using chloroacetyl chloride and finally substituted with 1*H*-benzo[*d*]imidazole thiol. All synthesized compounds **1-4a-g** have been characterized by <sup>1</sup>H and <sup>13</sup>C NMR and mass spectroscopy. The present work provides major scope for the synthesis of a new series of *N*-substituted pyrazoline derivatives bearing 2-mercaptobenzimidazole heterocycles having various pharmacological activities associated with it like anti-oxidant, anti-inflammatory, cytotoxic properties and antimicrobial activity. Most of the compounds (**3c**, **4a**, **4b**, **4c**, **4e**, **4f** and **4g**) display a fair degree of potent, anti-oxidant, anti-inflammatory, cytotoxic and antimicrobial properties.

**Keywords:** 2-Mercaptobenzimidazole, *N*-Substituted pyrazolines, Anti-inflammatory, Antioxidant, Cytotoxic studies