

**SYNTHESIS AND CHARACTERIZATION OF BENZOYL THIOUREA
(THIOSEMICARBAZONE) DERIVATIVE AND ITS FE (II), CO (II), AND
CU (II): POTENTIAL CANDIDATES FOR ANTIMICROBE**

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This Final Year Project report entitled “*SYNTHESIS AND CHARACTERIZATION OF BENZOYL THIOUREA (THIOSEMICARBAZONE) DERIVATIVE AND ITS Fe (II), Co (II), and Cu (II): POTENTIAL CANDIDATES FOR ANTIMICROBE*” was submitted by Gusti Nur Farwiza binti Gusti Anuar in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons) Chemistry in the faculty of Applied Sciences, and was approved by

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ABSTRACT

SYNTHESIS AND CHARACTERIZATION OF BENZOYLTHIUREA (THIOSEMICARBAZONE) DERIVATIVE AND ITS IRON (II): POTENTIAL CANDIDATES FOR ANTIMICROBE

Microbes are resistant to medicine and this has motivated researchers to develop new medicine from various chemical compounds, including thiosemicarbazone (TSC) derivatives and their metal complexes. In this study, two benzoyl thiourea containing thiosemicarbazones: N-(2-{{(Z)phenylmethylidene}carbamoithiyl}hydrazinecarbothiyl)benzamide, **L1** and N-(2-{{(1E,2E)-3-phenylprop-2-en-1-ylidene}carbamoithiyl}hydrazinecarbothiyl)benzamide, **L2**, were synthesized via two steps starting by attaching benzoyl thiourea into hydrazine side followed by condensation reaction on the other side in between amine group and aromatic aldehyde groups. Both new compounds were experimentally characterized by spectral methods using IR and UV-Vis. All benzoyl thiourea and aromatic aldehydes were successfully attached to the thiosemicarbazone moiety. The presence of the C=O group appeared in FTIR around 1676.7 cm^{-1} and 1607.08 cm^{-1} , respectively, indicating the attachment of benzoyl thiourea and aromatic aldehyde. Further complexation of these ligands with Fe (II), Co (II), and Cu (II) was characterized spectroscopically. The result shows that all the functional groups of the newly synthesized thiosemicarbazone ligands can coordinate with metals and shows a promising potency to act as an antimicrobial agent.