SYNTHESIS AND CHARACTERIZATION OF CURCUMINOIDS BY CLAISEN-SCHMIDT CONDENSATION AND THEIR CYTOTOXIC EFFECTS ON HELA AND K562 CANCER CELL LINES

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Master of Science

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SUPERVISOR’S DECLARATION

We hereby declare that we have checked this thesis and in our opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Master of Science in Industrial Chemistry.

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(Co-supervisor’s Signature)
Full Name  :
Position   :
Date       :
STUDENT’S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations, which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

_______________________________
(Student’s Signature)

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ID Number       : MKD15003
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SITI NOOR HAJAR BT ZAMRUS

Thesis submitted in fulfillment of the requirements for the award of the degree of Master of Science

Faculty of Industrial Sciences & Technology
UNIVERSITI MALAYSIA PAHANG

2018
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LIST OF ABBREVIATIONS

MTT 3-(4,5-Dimethythiazol-2-yl)-2,5-Diphenyltetrazolium Bromide
ABL Abelson murine leukemia
CH₃COOH Acetic acid
AML Acute myeloid leukemia
NH₄Cl Ammonium chloride
BDMC Bis-demethoxycurcumin
B₂O₃ Boron oxide
Br Bromine
CO₂ Carbon dioxide
¹³C-NMR Carbon nuclear magnetic resonance
cm Centimetre
CHCl₃ Chloroform
Cl Chlorine
CC Column chromatography
DMC Demethoxycurcumin
CH₂Cl₂ Dichloromethane
DMSO Dimethyl sulfoxide
DMEM Dulbecco’s Modified Eagle’s Medium
EtOAc Ethyl acetate
FBS Fetal bovine serum
F Fluorine
FTIR Fourier transform infrared spectroscopy
GC-MS Gas chromatography-mass spectroscopy
g Gram
Hex Hexane
HPV Human papillomavirus
NH₂NH₂ Hydrazine
kg Kilogram
HCI Hydrogen chloride
MS Mass spectroscopy
MeOH Methanol
<table>
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<tr>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>OCH₃</td>
<td>Methoxy</td>
</tr>
<tr>
<td>MWI</td>
<td>Microwave irradiation</td>
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<tr>
<td>MACs</td>
<td>Mono-carbonyl</td>
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<tr>
<td>n-BuNH₂</td>
<td>n-butylamine</td>
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<tr>
<td>NMR</td>
<td>Nuclear magnetic resonance</td>
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<tr>
<td>OD</td>
<td>Optical density</td>
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<tr>
<td>cm⁻¹</td>
<td>Per centimetre</td>
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<tr>
<td>KBr</td>
<td>Potassium bromide</td>
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<tr>
<td>¹H NMR</td>
<td>Proton nuclear magnetic resonance</td>
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<tr>
<td>QSAR</td>
<td>Quantitative structure-activity relationship</td>
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<td>rt</td>
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<td>Sodium hydroxide</td>
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<tr>
<td>Na₂SO₄</td>
<td>Sodium sulphate</td>
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<tr>
<td>H₂SO₄</td>
<td>Sulphuric acid</td>
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<td>Tetramethylsilane</td>
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<td>TLC</td>
<td>Thin layer chromatography</td>
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<td>UV-Vis</td>
<td>Ultraviolet-visible spectroscopy</td>
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<tr>
<td>v-Scr</td>
<td>Rous sarcoma virus</td>
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