CERTIFICATE

This is to certify that the thesis, entitled **''SYNTHETIC STUDIES ON QUINOLINE FUSED HETEROCYCLES**" submitted to the Bharathiar University, in partial fulfillment of the requirement for the award of the Degree of **DOCTOR OF PHILOSOPHY IN CHEMISTRY**, is a record of original research work done by **D. MAGESWARI** during the period 2012-2018 of her research in the Department of Chemistry at PSGR Krishnammal College for Women Coimbatore, under my supervision and guidance and the thesis has not formed the basis for the award of any Degree / Diploma / Associateship / Fellowship or other similar title of any candidate of any University.

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DECLARATION

I, **D. Mageswari** hereby declare that the thesis, entitled **''SYNTHETIC STUDIES ON QUINOLINE FUSED HETEROCYCLES**" submitted to the Bharathiar University, in partial fulfillment of the requirement for the award of the Degree of **DOCTOR OF PHILOSOPHY IN CHEMISTRY**, is a record of original and independent research work done by me during 2012-2018 under the Supervision and Guidance of **Dr.G. SELVI,** Department of Chemistry at PSGR Krishnammal College for Women Coimbatore, and it has not formed the basis for the award of any Degree / Diploma / Associateship / Fellowship or other similar title of any candidate of any University.

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This is to certify that the Ph.D. candidate **D. Mageswari** working under my supervision has published the following research articles in the refereed journals. The contents of the publication incorporate part of the results presented in her thesis.

1. Comparison of Theoretical & Experimental studies of 2-oxo-4-phenyl quinoline, Chemical Science Review and Letters, 2016, 5(19), 230-241.
2. Comparative study on Theoretical and Experimental Biological activities of Novel Pyranoquinolines" International Journal of Computational Innovative Research, 2017,13(5) , 1015-1020.

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Dedicated
to
my spouse and my baby

Dear, do you realize how much you mean to me
You give of yourself so much and so unselfishly.

You care and share and are always there
Whenever I am in need.
I just want you to remember
What a wonderful spouse you are to me

I just want you to remember
I respect you so greatly
and I thankyou
For being the greatest man in the world in every way.

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D. MAGESWARI

GENERAL REMARKS

All the figures pertinent to a chapter are placed after the relevant discussion in the following sequence IR, ^{1}H NMR, ^{13}C NMR 2D NMR, Mass spectra and Single crystal XRD. Each chapter contains separate experimental section.

Thin layer chromatography was performed using glass plates coated with silica gel G (incorp orating $CaSO_4$) (13%) as binder). Petroleum ether and ethyl acetate were used as elutant. Spots were visualized with iodine.

Purification of crude samples were carried out using chromatographic columns packed with silica gel (60-120 mesh). IR spectra were recorded on Spectrometer and the observation frequencies quoted in reciprocal centimeters.

Solvents petroleum ether(40-60%), petroleum ether(60-80%), benzene, ethyl acetate, chloroform, diethyl ether, methanol, ethanol, acetone and reagents used for synthesis were of analar grade and purified by standard methods. Anhydrous sodium sulphate and magnesium sulphate was used as to dry the solutions of organic extracts.

The NMR spectrum were taken on (500MHX) or (400MHZ) spectrometer using trimethyl silane (TMS) as internal standard. The chemical shifts are quoted in parts per million (ppm) (s-singlet, d-doublet, t-triplet, dd-doublet of doublet), bs-broad singlet, m-multiplet, J-spin spin splitting constant in Hertz.

Melting points were determined with a Labtronics digital auto melting point apparatus. UV spectra were recorded in UV-VIS spectrophotometer 3000^{+}, LAB INDIA. IR spectra were determined as Shimadzu ATR-IR Affinity. NMR, 2D NMR spectra was recorded on using a Bruker AV III 500, ECX500 - Jeol 500 MHz High Resolution Multinuclear FT-NMR Spectrometer. The mass spectral data were measured on a Jeol GC-MS GC-Mate II GC-Mass spectrometer. The CHNSO results was determined on Truspec Micro analyser spectrometer. Single crystal XRD was recorded in Enraf Nonius CAD4-MV31 single crystal X-ray diffractometer. Steady state fluorescence excitation and emission spectra were recorded by using JOBIN-YVON Fluorolog-3-11 Spectro fluorimeter. The solvents and reagents used for synthesis were of analar grade and purified by standard methods

Preparation of similar compounds are described with a general procedure.The intermediate and product samples analytical and spectral data of the compounds all are available in the Department.

ABBREVIATIONS

PPA	– Poly phosphoric acid	mm	– milli meter
H_2SO_4	– Sulphuric acid	eV	– electronvolt
HCl	– Hydrochloric acid	a.u	– atomic unit
$POCl_3$	– Phosphorous oxy chloride	esu	– electrostatic unit
$SOCl_2$	– Thionyl chloride	CPS	– counts per second
K_2CO_3	– Potassium carbonate	RMSD	– root-mean-square deviation
$KMnO_4$	– Potassium permanganate	Kcal/mole	– Kilo calorie per mole
Et_3N	– Triethylamine	HBD	– Hydrogen bond donor
DMA	– N,N-Dimethylacetamide	HBA	– Hydrogen bond acceptor
DMF	– Dimethylformamide	Logp	– Octanol-water partition coefficient
DMSO	– Dimethyl sulphoxide	Logs	– solubility in water
Alk	– alkaline	λ_{max}	– maximum wavelength
Conc.	– Concentrated	λ_{ex}	– excitation wavelength
PE	– Petroleum ether	λ_{em}	– emission wavelength
EA	– Ethyl acetate	log	– semi-logarithmic scale
ns	– nano second	m/z	– mass per charge
ps	– pico second	m.p	– melting point
nm	– nano meter	g	– gram
µg	– micro gram	mol	– mole
mg	– milli gram	mmol	– millimole
mL	– milli Litre	h	– hour/hours
µL	– micro Litre		
ppm	– parts per million		