# Dedication

*I dedicate this work with deep love and respect to*

*The soul of my father,*

*To my mother*

*My brother*

*My sisters*

*And to my friends.*

# Acknowledgments

Praise be to Allah the Almighty to all his blessing to us, and I would like to express my sincere gratitude and appreciation to my supervisor: Prof. Dr. Ahmed Elsadig Mohammed Saeed, for suggesting the idea of this work and guidance during all stages of research, and my deep gratefulness to my Co-supervisor: Dr. Amna Bintwahab Elrashid Mohammed, my gratitude goes also to Dr. Rafee Eljack, Dr. Abubaker Mohammed Osman, Rami Baha Aldin for $^{1}$H and $^{13}$CNMR analysis and Valantina for helping me to analyize my samples, my deep gratefulness to the staff of laboratory techniques for their help, and to all my colleagues in the research lab, and my sincere thanks to my family for their love and support.

# Abstract

A series of some new substituted quinolines were synthesized by Doebner reaction, a three component coupling of various aromatic amines with two aldehydes and phenyl pyruvic acid. The substituted 2,3-diary-6-acetyl-quinoline-4-carboxylic acids reacted with various aromatic aldehydes in the presence of basic medium using Claisen-Schmidt condensation to afford the corresponding chalcones. The substituted chalcones, on condensation with hydroxylamine hydrochloride in ethanol furnished isoxazoles derivatives. Other quinoline derivatives were synthesized in this study by using an aryl amine with acetylacetone as Combes reaction, Knorr reaction between aryl amine and ethylacetoacetate with heating above $100^{\circ}C$ and Conrad-Limpach quinoline synthesis a thermal condensation of aryl amine with ethylacetoacetate. The synthetic design of these compounds was achieved through retrosynthetic analysis (RSA) approach.

The reaction progress for all synthesized compounds was checked by (TLC) and m.p techniques, and the structures of synthesized compounds were confirmed using IR, $^{1}$HNMR, $^{13}$CNMR, and GC-MS. All the compounds have been screened for their antibacterial and antifungal activity, the most active compounds were those bearing sulphonamide group in position six of 3-phenyl-quinoline derivatives, hydroxyphenyl group which linked with propen-2-one of chalcones, two active compounds appear in isoxazoles those were bearing phenyl group in position six and hydroxyphenyl group which linked with proper- 2-one, 2-methyl, 4-hydroxy group appear as the most active compound of quinoline derivatives.

# الخلاصة

سلسلة من بعض مستبدلات الكينولين الجديدة تم تخليقها بواسطة تفاعل دويبنر وهو اقتران بين ثلاثة مكونات ، عدد من الامينات الاروماتية مع نوعين من الالدهيد و حمض فينيل بيروفيك. مستبدلات 2,3-ثنائي اريل-6-اسيتيل-كينولين-4-حمض كربوكسيل فوعلت مع عدة الدهيدات اروماتية في وجود وسط قاعدي باستخدام تكاثف كلايزن-شميدت لتعطي الشالكون المقابل، الشالكونات المستبدلة عند تكاثفها مع هيدروكسيل امين هيدروكلوريد في ايثانول اعطت مشتقات ايزوكزازول، مشتقات كينولين اخرى تم تخليقها في هذه الدراسة باستخدام اريل امين مع ايثيل اسيتون في تفاعل كومبس، تفاعل كنور بين اريل امين وايثيل اسيتواسيتيت مع التسخين لدرجة مائة، تفاعل كونراد-ليمباش هو تكاثف حراري لاريل امين مع ايثيل اسيتواسيتيت .

التصميم التخليقي لهذه المركبات تم تحقيقه من خلال نهج تحليل التخليق الرجعي، تقدم التفاعل للمركبات المخلقة تمت متابعته بواسطة تقنيتي كروماتوغرافيا الطبقة الرقيقة ودرجة الانصهار، و تم التاكد من شكل المركبات باستخدام طيف الاشعه تحت الحمراء و طيف الرنين النووي المغناطيسي للبروتون و الكربون بعض من المركبات حلل بكروماتوغرافيا الغازالمقترن مع طيف الكتلة. كل المركبات فحصت للتعرف علي نشاطها ضد البكتيريا و الفطريات، اكثر المركبات نشاطا هي التي تحمل مجموعة سلفوناميد في الموقع رقم ستة في مشتقات 2-فينيل-كينولين، مجموعة هيدروكسي فينيل المرتبطة مع بروبين-2-ون من الشالكونات، مركبين نشيطين ظهروا في الايزوكزازول وهي الحاملة مجموعة فينيل في الموقع رقم ستة ومجموعة هيدروكسي فينيل المرتبطة مع بروبين-2-ون، مجموعة 2-ميثيل، 4-هيدروكسي ظهرت كالمركب الاكثر نشاطية في مشتقات الكينولين.

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| ph | Phenyl group |
| Ar | Aromatic group |
| R | Alkyl group |
| Me | Methyl group |
| DABCO | 1,4-diazabicyclo[2.2.2]octane |
| CQ | Chloroquin |
| CQR | CQ-resistant |
| DMSO | Dimethylsulphoxide |
| PRG | Propylene glycol |
| RT | Room Temperature |
| liq | Liquid |
| temp | Temperature |
| Rec.solv | Recrystalyzation solvent |
| m.p | Melting point |
| St.vib | Stretching vibration |
| δ | Chemical shift |
| s | Singlet |
| d | Doublet |
| t | Triplet |
| q | Quartet |
| m | Multiplied |
| ppm | Part per million |