

# الآية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

(مَنْ هُوَ قَانِتٌ آنَاءَ اللَّيْلِ سَاجِدًا وَقَائِمًا يَحْتَزُّ الآخِرَةَ  
وَيَرْجُو رَحْمَةَ رَبِّهِ ۗ قُلْ هَلْ يَسْتَوِي الَّذِينَ يَعْلَمُونَ  
وَالَّذِينَ لَا يَعْلَمُونَ ۗ إِنَّمَا يَتَّبِعُ أَوَّلُو الْأَبَابِ) (٩)

صدق الله العظيم

سورة الزمر (الآية ٩)

## **DEDICATION**

I thank Allah to give me strength and health to complete this research.

I dedicate my dissertation work to my family, Firstly the memory of my mother: **Aisha Ahmed Khalifa**.

A special and deep dedication and feeling of gratitude to my loving, wonderful, amazing and great father **Mohammed Osman Fadl Almola Altoom**.

My sisters **Mayada** and **Zeinab** have never left my side and are very special.

Lastly I dedicate this dissertation to every one who loved and cared about me.

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## Abstract

Fifteen Mannich bases and sixteen Schiff bases were synthesized . A general synthesis protocol was adopted . The following bases were synthesized :

2-dimethylaminomethyl-5,5-dimethylcyclohexane-1,3-dione (**1**) , 2-diethylaminomethyl-5,5-dimethylcyclohexane-1,3-dione (**2**), 2-pyrrolidinomethyl-5,5-dimethylcyclohexane-1,3-dione (**3**), 2-morpholinomethyl-5,5-dimethylcyclohexane-1,3-dione (**4**), 2-piperidinomethyl-5,5-dimethylcyclohexane-1,3-dione (**5**) , 2-diphenylaminomethyl-5,5-dimethylcyclohexane-1,3-dione (**6**) , 2-piperidinomethyl-5-nitrophenol (**7**) , 2-diphenylaminomethyl-3-nitrophenol (**8**) , 2-piperidinomethyl-4-chloro-5-methylphenol (**9**) , 2-diphenylaminomethyl-4-chloro-5-methylphenol (**10**) , 2-N-methylpiperazinomethyl-5,5-dimethylcyclohexan-1,3-dione (**11**) , 3-piperidinomethylpentane-2,4-dione (**12**) , 2-diphenylaminomethyl-4-aminophenol (**13**) , 2-N-methylpiperzinomethyl-5-nitrophenol (**14**) , 2-morpholinomethyl-5-nitrophenol (**15**) , (E)-2[(dimethylaminomethyl)-5,5-dimethyl-3-(phenylimino)]cyclohexanone (**16**) , (E)-2-[(diethylaminomethyl)-5,5-dimethyl-3-(phenylimino)]cyclohexanone (**17**) , (E)-5,5-dimethyl-3-(phenylimino)-2-(pyrrolidin-1-yl)cyclohexanone (**18**) , (E)-N-[2-(dimethylaminomethyl)-5,5-dimethyl-3-oxocyclohexylidene]benzamide (**19**) , (E)-N-[2-(diethylaminomethyl)-5,5-dimethyl-3-oxocyclohexylidene]benzamide (**20**) , (E)-N-[5-dimethyl-3-oxo(pyrrolidin-1-methyl)cyclohexylidene]benzamide (**21**) , (E)-4-[2-(dimethylaminomethyl)-5,5-dimethyl-3-oxocyclohexylideneamino]benzoicacid (**22**) , (E)-4-[2-(diethylaminomethyl)-5,5-dimethyl-3-oxocyclohexylideneamino]benzoicacid (**23**)

, (E)-4-[5,5-dimethyl-3-oxo-2-(pyrrolidin-1-ylmethyl)cyclohexylideneamino]benzoic acid ( **24** ) , (Z)-5,5-dimethyl-2-(morpholinomethyl)-3-(phenylimino)cyclohexanone ( **25** ) , (E)-4-[5,5-dimethyl-2-(morpholinomethyl)]-3-(oxocyclohexylideneamino)benzene sulfonic acid ( **26** ) , (E)-5,5-dimethyl-3-(phenylimino)-2-(piperidin-1-ylmethyl)cyclohexanone ( **27** ) , (E)-2-(diphenylaminomethyl)-5,5-dimethyl-3-(phenylimino)cyclohexanone( **28** ) , (Z)-3-[(2-aminomethylimino)-2-(diphenylaminomethyl)]cyclohexanone( **29** ) , (Z)-5,5-dimethyl-2-(morpholinomethyl)-3-(3-nitrophenylimino)cyclohexanone ( **30** ) , (Z)-2-(diphenylaminomethyl)-5,5-dimethyl-3-(3-nitrophenylimino)cyclohexanone ( **31** ) . The structure of the intermediates and targeted molecules was elucidated by a combination of spectral techniques (IR, <sup>1</sup>HNMR, Ms).

The targeted molecules were evaluated for antibacterial and antifungal activity. Compounds 9,10,13,14,15,25,29 and 31 showed significant antimicrobial activity. However, compounds 11 and 30 showed significant antifungal activity . Compounds 12 and 22 showed moderate antimicrobial activity, but compounds 3,7 and 16 exhibited only antibacterial activity . However, compound 5 exhibited only antifungal activity .Compounds 1,2,4,6,8,17,18,19,20,21,23,24,26,27 and 28 did not show any antimicrobial activity.

## المستخلص

١٥ قواعد ماناخ و ١٦ قواعد شيف تم تصنيفهم ، باستخدام طريقة عامة لتصنيع قواعد ماناخ وشيف .

القواعد التالية تم تحضيرها :

2-dimethylaminomethyl-5,5-dimethylcyclohexane-1,3-dione (1) , 2-diethylaminomethyl-5,5-dimethylcyclohexane-1,3-dione (2), 2-pyrrolidinomethyl-5,5-dimethylcyclohexane-1,3-dione (3), 2-morpholinomethyl-5,5-dimethylcyclohexane-1,3-dione (4), 2-piperidinomethyl-5,5-dimethylcyclohexane-1,3-dione (5) , 2-diphenylaminomethyl-5,5-dimethylcyclohexane-1,3-dione (6) , 2-piperidinomethyl-5-nitrophenol (7) , 2-diphenylaminomethyl-3-nitrophenol (8) , 2-piperidinomethyl-4-chloro-5-methylphenol (9) , 2-diphenylaminomethyl-4-chloro-5-methylphenol (10) , 2-N-methylpiperazinomethyl-5,5-dimethylcyclohexan-1,3-dione (11) , 3-piperidinomethylpentane-2,4-dione (12) , 2-diphenylaminomethyl-4-aminophenol (13) , 2-N-methylpiperzinomethyl-5-nitrophenol (14) , 2-morpholinomethyl-5-nitrophenol (15) , (E)-2[(dimethylaminomethyl)-5,5-dimethyl-3-(phenylimino)]cyclohexanone (16) , (E)-2-[(diethylaminomethyl)-5,5-dimethyl-3-(phenylimino)]cyclohexanone (17) , (E)-5,5-dimethyl-3-(phenylimino)-2-(pyrrolidin-1-yl)cyclohexanone (18) , (E)-N-[2-(dimethylaminomethyl)-5,5-dimethyl-3-oxocyclohexylidene]benzamide (19) , (E)-N-[2-(diethylaminomethyl)-5,5-dimethyl-3-oxocyclohexylidene]benzamide (20) , (E)-N-[5-dimethyl-3-oxo(pyrrolidin-1-methyl)cyclohexylidene]benzamide (21) , (E)-4-[2-(dimethylaminomethyl)-5,5-dimethyl-3-oxocyclohexylideneamino]benzoicacid (22) , (E)-4-[2-(diethylaminomethyl)-5,5-dimethyl-3-oxocyclohexylideneamino]benzoicacid (23)

, (E)-4-[5,5-dimethyl-3-oxo-2-(pyrrolidin-1-ylmethyl)cyclohexylideneamino]benzoic acid ( **24** ) , (Z)-5,5-dimethyl-2-(morpholinomethyl)-3-(phenylimino)cyclohexanone ( **25** ) , (E)-4-[5,5-dimethyl-2-(morpholinomethyl)]-3-(oxocyclohexylideneamino)benzene sulfonic acid ( **26** ) , (E)-5,5-dimethyl-3-(phenylimino)-2-(piperidin-1-ylmethyl)cyclohexanone ( **27** ) , (E)-2-(diphenylaminomethyl)-5,5-dimethyl-3-(phenylimino)cyclohexanone( **28** ) , (Z)-3-[(2-aminomethylimino)-2-(diphenylaminomethyl)]cyclohexanone( **29** ) , (Z)-5,5-dimethyl-2-(morpholinomethyl)-3-(3-nitrophenylimino)cyclohexanone ( **30** ) , (Z)-2-(diphenylaminomethyl)-5,5-dimethyl-3-(3-nitrophenylimino)cyclohexanone ( **31** ) .

النواتج الوسيطة والنهائية تم تحديد تركيبها باستخدام التقنيات المطيافية (IR, <sup>1</sup>HNMR, Ms) .

أيضا أجرى إختبار للمركبات المصنعه لمعرفة مدى فعاليتها كمضادات للبكتريا والفطريات . المركبات 9,10,13,14,15,25,29,31 أعطت فعالية عالية ضد الفطريات و المركبان ١٢ و ٢٢ أعطيا فعالية متوسطة ضد الميكروبات ، بينما المركبات ١١ و ٣٠ أعطت فعالية عالية ضد الفطريات فقط ضد البكتريا . في حين أن المركب ٥ أعطي فعالية فقط ضد الفطريات . المركبات 1,2,4,6,8,17,18,19,20,21,23,24,26,27,28 لم تكن فعالة ضد الميكروبات .



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