

# الآية

بسم الله الرحمن الرحيم

قال تعالى :

(( والله اخرجكم من بطون امهاتكم لا تعلمون شيئاً

وجعل لكم السمع والابصار والافئدة لعلكم تشكرون ))

سورة النحل : الآية (78)

صدق الله العظيم

## **Dedication**

**I dedicate this work to**

**My grand family**

**My wife**

**My lovely son**

## **Acknowledgements**

I would like to express my great appreciation and gratitude to my supervisor prof Ahmed Elsadig Mohammed Saeed for his lucid and clear scope design of this research and help throughout this work. My great thank for prof. Mohamed Hassan Abuuzunein for his support and provid time for my Msc program. Also i wish to thank Ustaz. Mohammed Suliman for help according to his great practical experience.

## **Abstract**

Mannich reaction is of great scope and utility , employed in organic synthesis of natural compounds such as peptides ,nucleotides , antibiotics , and alkaloids ,other applications are in agrochemicals such as plant growth regulators ,paint and polymer chemistry ,catalysts and cross linking .In this work derivatives of indole-3-butyric acid ,and 2-phenylindole were prepared as manich bases by the nucleophilic addition of an amine to carbonyl group of formaldehyde followed by dehydration to Schiff base .The Schiff base is an electrophile which react in the second step in a nucleophilic addition with a compound containing an acidic proton (indole-3-butyric acid ,and 2-phenylindole) .The compounds were prepared according to a well stablished literature methods and identities of these compounds were confirmed by IR , UV, MS spectrophotometer and TLC analysis. Mechanism of reaction is given and discussed in chapter three. Detailed spectral (IR, MS) analysis of target compounds was given. The functional groups were assigned to proper absorption bands, a variation in the number of peaks , positions and increasing or decreasing in the values of bonds were noticed according to various effects, such as resonance effects, conjugation effects etc...

## خلاصة البحث

تفاعل مانخ له مجالات واسعة واستخدامات متعددة فهو يستخدم في التخليق العضوي للمركبات الطبيعية مثل البتبيدات ، النيوكليوتيدات ، المضادات الحيوية والقلويدات ، كذلك يدخل تفاعل مانخ في تطبيقات أخرى في الكيمائيات الزراعية كعامل منظم لنمو النبات ، أيضاً يدخل في كيمياء البوهيات ، البوليمرات ، العوامل الحفازة والعوامل الرابطة.

في هذه الدراسة تم تحضير كل من مشتقات إندول-3- حامض البيوتريك و 2-فينيل إندول كقواعد مانخ بواسطة الإضافة النيوكليوفيلية للإمينات لمجموعة الكاريونيل الموجودة في الفورمالدهيد ، تتبع هذه الإضافة نزع جزئي الماء لتكوين قاعدة سكيف. قاعدة سكيف الكتروفيل يتفاعل في الخطوة الثانية للإضافة النيوكليوفيله مع مركب يحتوي على بروتون حمضي ( 2- فينيل إندول ، إندول-3- حمض البيوتريك ).

هذه المركبات تم تحضيرها وفقاً لأسس نظرية وطرق تحضيرية مسبقة وسليمة وتم فحصها وإختبارها لمعرفة بنيتها التركيبية بواسطة الطرق الطيفية متمثلة في الأشعة تحت الحمراء ، والأشعة فوق البنفسجية وطيف الكتلة وكروماتوغرافيا الطبقة الرقيقة. ميكانيكية التفاعل والتخليق الرجعي لهذه المركبات نوقشت في الفصل الثالث من هذا البحث بالإضافة إلى تفاصيل التحليل الطيفي ، تم تحديد حزم الإمتصاص للمجموعات الوظيفية ، الاختلاف في عدد الحزم واماكنها والزيادة أو النقصان في مدى إمتصاصها وقيمها تم ملاحظته وفقاً لعدد عوامل مثل عوامل الرنين والتعاقب في الروابط.

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### **List of abbreviations**

<b>abbreviations</b>	<b>Meaning of the abbreviation</b>	<b>Page no.</b>
.Comp No	Compound number	30
Reac Temp	Reaction temperature	30
Recryst solvent	Recrystilization solvent	30
Perc Yield	Percent yield	30
M. P	Melting point	30
Rf- values	Retention factor value	32
RSA	Retro synthetic analysis	37
St.vib	Stretching vibration	35
Bend.	Bending	35