

# Acknowledgement

I would like to express my sincere gratitude and appreciation to my supervisor Dr. Ahmed Elsadig Mohammed Saeed, who has given me much of his time for suggestions and supervision of this work.

I am greatly indebted to my Co- supervisor Dr. Bakeri Bushara without whose help and notable assistance this work could never been done.

I am very grateful to Mr. Babekir Khalid for his continuous helps and for providing materials and chemicals needed in this work.

I would not forget the staff of microbiology in Faculty of Pharmacy, University of Khartoum, and I offer my special thanks to Ustaza Monera and Nour Elsham for their continuous help and for providing me with bacteria organism and media.

I would like to express my sincere thanks and gratitude to Dr. Mohmmmed Elfatih for allowing me to do the work concerned with testing fungi at Medicinal and Aromatic Plants Research Labs. The thanks are due to Dr. Aisha and extended to all the staff of the Medicinal and Aromatic Plants Research Labs.

My thanks are also due to the Faculty of Science, U.K. and to Ustaz Mohammed Ahmed.

I am also grateful to Ustaz Abd Elkariem Mohammed Ibrahim and all the technical staff of the Chemistry department, Sudan University of Science and Technology for their help.

I would like also to thank Mr. Elsadig Hassan (Amipharma Labs) and Major G.A. Hassan (Custom Labs) for their help in work of I.R. analysis.

I am very grateful to Dr. Fakhar Eldien and Dr. Kheder Adam for help in carrying NMR analysis.

My thanks to Mr. Eltahir Mohammed Eltahir and Mr, Mohammed Ahmed Mohamed Ibrahim for typing the thesis.

I am grateful to my friends who helped me during the collection of materials and for providing me some chemicals in this work.

I express my sincere thanks and gratitude to my parents and my husband who helped and encouraged me to do the project.

## Abstract

Xanthenes are important group of compounds characterized by their certain biological activities. These compounds can be synthesized from the corresponding aldehydes. The carbonyl group in aldehydes is one of the versatile functional groups. Chapter one of this thesis deals basically with the chemistry of the aldehyde group with especial emphasis on their reactions as carbanions. This chapter deals also with xanthenes compounds together with a review of their biological importance, in addition, a short concise treatment of retrosynthesis analysis was covered. In this work nine octahydroxanthen-1,8-dione derivatives with their nine bisdimedone intermediates were designed and synthesized. The total synthesis was designed from the appropriate disconnections of the target molecules. Therefore the aldehyde was firstly condensed with dimedone in order to obtain the bisdimedone derivative, which followed by the acidic cyclization to form the 9-substituted-1,8-diketo octahydro xanthenes. The reaction course was followed with TLC technique. All the intermediates and the final compounds were subjected to UV and IR analysis. Further more most of the intermediates and the final octahydroxanthenes were analyzed with  $^1\text{H}$  and  $^{13}\text{C}$ -NMR. The corresponding hydrazones and oximes were prepared and their m.ps were recorded.

Possible mechanistic explanation of the different synthetic routes together with their retrosynthetic analysis were dealt with in chapter three.

The intermediates and the final compounds were scanned for their antibacterial activity against *S. aureus*, *E. coli* and *P. aeruginosa*, the compounds were found to possess some antimicrobial activity. The compounds were assayed for their antifungal activity against *C. albicans*.

## الخلاصة

الزانسينات مركبات من مجموعة المركبات التي تمتاز بالنشاط البيولوجي. حيث يمكن أن تصنع من الألدهيدات المناظرة. وتعتبر مجموعة الكربونيل من المجموعات الفعالة ذات الإستعمال المتعدد. الفصل الأول من هذا البحث يتناول كيمياء مجموعة الألدهيد و تفاعلات كربون أنيون و كما يتناول مركبات الزانسينات، أهميتها البيولوجية كما يعطي دراسة عن كيفية إعادة المركبات المخدقة إلي المركبات الأولية التي تركبت منها. حضرت في هذا البحث تسعة من مركبات مشتقات الدايمدون وهي مركبات وسيطة و تسعة أوكتاهايدروزانسينات وهي مركبات نهائية و كل من المركبات الوسيطة و النهائية قد صنعت من المركبات التي نتجت من عملية التفكيك أولا الألدهيد قد كثف مع الدايمدون فتكونت مشتقات الدايمدون ثم أضيف الحامض فقلقت الحلاقة فتكون المركب النهائي أوكتاهايدروزانسينات وكانت في مجملها تسعة. و كل هذه التفاعلات دعمت باختبار كروماتوغرافيا الطبقة الرقيقة كما درست هذه المركبات بتحليلها عن طريق طيف الأشعة تحت الحمراء والأشعة فوق البنفسجية و معظم المركبات الوسيطة و النهائية تم تحليلها عن طريق طيف الرنين النووي المغنطيسي للبروتون والكربون 13. كما حضرت مشتقات الأوكزيمات والهيدرازونات لها و سجلت نقاط إنصارتها.

المكانية الممكنة لتوضيح مختلف طرق التخليق عن طريق تحليل الضديد التخليقي يوجد في الفصل الثالث ، الفعالية البيولوجية للمركب الوسيطي و النهائي ضد النشاط الميكروبي. و قد أختبرت ضد النشاط البكتيري لثلاثة أنواع هي المكوارات العنقودية الذهبية و الا شريكية القولونية والزائفة الزنجارية كما أختبرت ضد الفعالية الفطرية لنوع واحد وهو المبيضة البيضاء قد وجد بأنها تمتلك معظم الفعالية ضد النشاط الميكروبي.

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