

# **DEDICATION**

*To my family*

## **ACKNOWLEDGEMENT**

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## Abstract

In this study, thirty one new compounds of 1- ( $\alpha$ -aminobenzyl)-2-naphthol derivatives (Betti bases) were synthesized using two methods. In the first method, these compounds were synthesized via 1,3-naphthoxazines, by condensation reaction between  $\beta$ -naphthol, aromatic aldehydes and primary or secondary amines as a source of nitrogen in presence of methanol as a solvent, in the ratio of 1: 2: 1 at ambient temperature for two days. The prepared 1,3-naphthoxazines were hydrolysed in hydrochloric acid 20% with reflux for six hours to give products known as the Betti base derivatives. In the second method, Betti base derivatives were synthesized directly in one step by condensation reaction of  $\beta$ - naphthol, aromatic aldehydes and ammonia solution, in the presence of water as a solvent, in the ratio of 1: 1: 1 at ambient temperature with stirring for one hour.

Some of the synthesized Betti base derivatives that had been coupled with benzene diazonium salts gave products in moderate to high yield as colored azo dyes.

The resulting compounds were purified by recrystallization and then tested by thin-layer chromatography. Physical properties of these compounds (colour, melting point, yield in grams and percentage) and spectral properties (UV, IR,  $^1\text{H-NMR}$  and mass spectrometry) were measured. The results obtained revealed that the Betti base derivatives, whether they were synthesized either through 1,3-naphthoxazine or directly in one step gave identical spectral behavior and physical properties.

## الخلاصة

في هذه الدراسة تم تخليق عدد واحد وثلاثون من المركبات الجديدة وهي مشتقات المركب 1-( $\alpha$ -أمينوبنزائل) -2- نافثول (مشتقات قاعدة بيتي) وذلك باستخدام طريقتين. في الطريقة الأولى تم التخليق عبر الاوكسازين حيث تم تخليق عدد من المركبات المعروفة باسم 1,3- نافثواوكسازين وذلك بتفاعل تكاثف بيتا نافثول ، الدهيدات أروماتية وامينات اولية أوثانوية كمصدر للنيتروجين بنسبة (1:2:1) في وجود الميثانول كمذيب في درجة حرارة الغرفة لمدة يومين. هذه الاوكسازينات المشتقة اجريت لها عملية تحليل بواسطة حمض الهيدروكلوريك 20% واعطت نواتج عرفت باسم مشتقات قاعدة بيتي.

أما في الطريقة الثانية تم تخليق مشتقات قاعدة بيتي مباشرة من خطوة واحدة وذلك بتفاعل تكاثف بيتا نافثول ، الدهيدات أروماتية ومحلول الامونيا في وجود الماء كمذيب في درجة حرارة الغرفة بنسب تفاعلية (1:1:1) مع التقليب لمدة ساعة.

بعض من مشتقات قاعدة بيتي المخلفة باي من الطريقتين تم اجراء تفاعل ازدواج لها مع املاح ديازونيوم في درجة حرارة تتراوح بين صفر – 5 درجات مئوية واعطت مركبات ملونة ذات حصيلة انتاجية متوسطة الي عالية عرفت باسم اصباغ الازو التي تستخدم كمواد صباغية.

المركبات الناتجة تمت تنقيتها ومن ثم تم اختبارها بواسطة تقنية كروماتوغرافيا الطبقة الرقيقة. درست الخواص الفيزيائية لهذه المركبات (اللون ، درجة الانصهار ، الناتج بالجرام والنسبة المئوية للناتج) والخواص الطيفية باستخدام اجهزة طيف ( الأشعة فوق البنفسجية ، تحت الحمراء ، الرنين النووي المغنطيسي (بروتون – 1 ) وطيف الكتلة). اظهرت هذه التحاليل ان مشتقات قاعدة بيتي سواء تم تخليقها عبر 1,3- نافثواوكسازين أو مباشرة في خطوة واحدة تعطي خواص فيزيائية وطيفية متطابقة.

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## LIST OF ABBREVIATIONS

%	percentage
°C	degree centigrade
<sup>1</sup> H-NMR	nuclear magnetic resonance (proton-1)
Ar	aryl group
DMSO	dimethylsulphoxide
<i>et al</i>	and other authors
Et <sub>2</sub> O	diethyl ether
EtOAc	ethyl acetate
EtOH	ethanol
g	gram
GC-MS	gas chromatography – mass spectroscopy
H	proton
hrs	hours
IR	infrared
M	molar
m	multiplate
m.p	melting point
M.Wt	molecular weight
MCR	multi component reaction
MeOH	methanol
MS	mass spectrometry
OCH <sub>3</sub>	methoxy group
ppm	part per million
r.t	room temperature
Rec	recrystallization
R <sub>f</sub>	retention factor
s	singlet
st.vib	stretching vibration
sym	symmetry
THF	tetra hydro furan
TLC	thin-layer chromatography
UV	ultra violet