

# الآية

قال تعالى : {أَقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ {1}  
خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ {2} أَقْرَأْ وَرَبُّكَ  
الْأَكْرَمُ {3} الَّذِي عَلَّمَ بِالْقَلَمِ {4} عَلَّمَ  
الْإِنْسَانَ مَا لَمْ يَعْلَمْ {5}

صدق الله العظيم

سورة العلق من الآية ( 1 - 5

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# **DEDICATION**

To my father,

Mother,

Brothers,

Sisters,

Husband and children

# ACKNOWLEDGMENTS

I am greatly indebted to my supervisor Dr. Elmugdad Ahmed Ali who has supervised this study and offered his direction, encouragement and guidance throughout this work, and without his patience, his invaluable and continuous assistance and advice. This work could not have become a reality, appreciate the assistance to Dr. Adam Khatir Sam, Dr. Abd Elrheem Mohamed, Dr. Noha Yousif, Dr. Abdella ElAabid and Ustaz. Ahmed Abker. My special thanks to the University of Bakht Al- Ruda for giving me this chance. I wish to record my deep gratefulness to the staff of chemical laboratories, College of Science, University of Sudan for Science and Technology, for their help and facilities kindly provided, specially Ibramim Khalifa, Ibrahim Yahya, Fathi, Adam and Eyhab. My greatest thanks to my teachers and Sudan University of Science and Technology, and staff of Al-Neelain University for their support.

### **Abstract:**

Three hydroxamic acids (stearo - , oleo, plamatio) were prepared from stearic, oleic and palmitic acids by the reaction of their corresponding methyl esters with hydroxamine hydrochloride. The prepared hydroxamic acids were identified by their characteristic reaction colour with vanadium (V) (reddish-violet) and with iron (III) (blood – red), melting point, FT-IR. Spectra,  $^1\text{H-NMR}$ ,  $^{13}\text{C-NMR}$  and elemental analysis. The extractive properties of the three hydroxamic acids using chloroform at pH 4, towards Mo(VI) were examined. Maximum extraction efficiencies of 92.92% for stearohydroxamic acid, 95.0% for oleohydroxamic acid and 93.0% for Palimitohydroxamic.

## ملخص البحث

تم تحضير ثلاثة احماض هايدروكسيميية وهي :

استيارو هايدروكساميك - أوليو هايدروكساميك - بالميتو هايدروكساميك .  
من حمض- الانتياريك والاولياك والبلماتك- بتفاعل- انتراتها الميثلية- مع-  
هايدروكسيل امين الحر .

تم التعرف على الاحطض الهيدروكيميية التي تم- تحضيرها عن- طريق-  
التفاعلات ذات الالوان المميزة مع الفانديوم (V) ( بنفسجي ) والحديد (III)  
( أحمر ) ، بقياس نقاط الانصهار ، أطيايف الاشعة تحت الحمراء ، الطنين-  
النووي المغناطيسي ( $^{13}\text{C}, ^1\text{H}$ ) وتحليل العناصر .

وجد ان نسبة المقدرة الاستخلاصية القصوى لهذه الاحماض  
الهايدروكسيميية الثلاث المذابة في الكلوروفورم عند الرقم الهايدروجيني 4  
تجاه أيون للموليبيديوم (VI) كما يلي :

بلغت أعلى- قيمة- أستخلاصية لحامض الاستيارو هايدروكساميك  
للموليبيديوم . 92,92% ، وبلغت أعلى- قيمة- استخلاصية لحامض اوليو-  
هايدروكساميك للموليبيديوم 95% وكم- بلغت أعلى- قيمة- استخلاصية  
لحامض بالميتو هايدروكساميك للموليبيديوم 93% .

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## Abbreviations and nomenclature

### Abbreviations

cm	Centimeter ( $10^{-2}$ of a meter )
dm	Decimeter ( $10^{-1}$ of a meter)
EDTA	Ethylene diamine tetra acetic acid
G	Gram
Mg	Milligram
Ppm	Parts per million
$^{\circ}\text{C}$	degrees centigrade
u.v.	Ultra violet
i.r.	Infrared
n.m.r.	nuclear magnetic resonance
Nm	Nanometer ( $10^{-9}$ of a meter )
$\lambda$	Wavelength
$\epsilon$	Molar absorptivity
max.	Maximum
M	Molarity
D	Density
Mol	Mole
A.R.	Analytical reagent
m.p.	Melting point
b.p.	Boiling point
M.Wt	Molecular weight
Conc.	Concentrated
Fig.	Figure
No.	Number
Lit.	Literature
A.	Appendix

### Nomenclature



SHXA	Stearohydroxamic acids
PHXA	Plamitohydroxamic acids
OHXA	Oleohydroxamic acids

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**SUDAN UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**COLLEGE OF GRADUATE STUDIES**

Solvent Extractive Properties of some Aliphatic Hydroxamic  
Acids towards Molybdenum (VI)

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**A Thesis submitted for the fulfillment for the Degree Master of  
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