



**International University of Africa  
Deanship of Graduate studies  
Faculty of medicine**

Measurement of uric acid, urea and creatinine in plasma of  
hypertensive patients in Khartoum Sudan

**A thesis submitted in partial fulfillment of the requirement  
For the degree of M.S c in biochemistry**

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## الاية

قال تعالى :

(اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ (1) خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ (2) اقْرَأْ وَرَبُّكَ الْأَكْرَمُ (3)  
الَّذِي عَلَّمَ بِالْقَلَمِ (4))

صدق الله العظيم

سورة العلق (1-4)

## **Dedication**

I dedicated my work to my beloved mother's, and for the soul of my late father, brothers and sisters. I am sincerely expressed acknowledgement to my beloved my husband, my faith full friends and also to all those who taught me a letter.

## **Acknowledgements**

Thanks first and last to ALLAH who enabled me to conduct this study by grace of him and donated strength and patience my special thank, grate fullness and profound gratitude to my Supervisor Professor: Osman Mohamed Elsheikh Who made this study possible by his valuable guidance, advices, efforts and patience. Also very special thanks to my lovely uncle Dr: Hashim Dliel

Iam extended my appreciation for all respondents who have participated in this study and from whom blood samples were collected.

Finally, I wish to express my great thanks to all members of biochemistry department and those People who helped me in this study.

## **Abstract**

This study is descriptive analytical cross sectional study, aimed to measure plasma uric acid, urea and creatinine levels in Sudanese hypertensive patients. Blood samples were collected from sixty patients with hypertension (study group) and twenty five samples from healthy, normotensive subjects (control group) from ribat university Hospital during the period from December 2017 to January 2018. Plasma levels of uric acid, urea and creatinine were measured in each group. Results showed that in hypertensive patients, the plasma uric acid mean level was (8.5<sub>-</sub>+1.6 mg/dl), urea mean level was (40<sub>-</sub>+13.4mg/dl) and for creatinine (1.14<sub>-</sub>+0.28mg/dl) were significantly higher than normotensive. (P.value< 0.03), (p.value< 0.001) and (p.value<0.05) respectively. The study illustrated a moderately weak positive correlation between uric acid and systolic and diastolic measurements of hypertension patient to. (r=0.58, p.value 0.000).

Renal function and uric acid should regularly measured In hypertensive patients especially in those with prolonged period of the disease.

## المستخلص

هذه الدراسة وصفية تحليلية مقطعية هدفنا لقياس مستوى اليوريا و الكرياتينين في بلازما الدم في مرضى ارتفاع ضغط الدم السودانيين في هذه الدراسة تم جمع ستون عينة من مرضى يعانون من ارتفاع ضغط الدم وخمسة وعشرين عينة سليمة (اصحاء ظاهرين) من مستشفى الرباط الجامعي خلال الفترة من شهر ديسمبر (2017) الي شهر يناير (2018) تم قياس مستوى حمض البوليك، اليوريا و الكرياتينين في بلازما الدم لكل مجموعة اظهرت النتائج في مرضى ارتفاع ضغط الدم ان متوسط حمض البوليك هو (مل/ جرام 8.2\_ +45)، البولينا هو (40 مل/ جرام\_ +13.4) والكرياتينين هو (مل/ جرام 1.14\_ +28) وهم احصايبا اعلي من المجموعه السليمه القيمه المعنويه للحمض البوليك (هي اقل من 0.03) القيمه المعنويه لليوريا هي (اقل من 0.001) والقيمه المعنويه للكرياتينين هي (اقل من 0.05).

كما اظهرت الدراسه وجود ارتباط وسطي موجب بين مستوي حمض البوليك وقرات الضغط الدم الانبساطيه والانقباضيه (معامل بيرسول 0.05 والقيمه المعنويه 0.00) يجب قياس وظائف الكلي وحمض البوليك بانتظام وخصوصا في المرضى الذين يعانون من ارتفاع ضغط الدم لفترة طويلة من الزمن.

## **Abbreviations:**

BMI	Body mass index
NHANES	National health examination surveys
SBP	Systolic blood pressure
DBP	Diastolic blood pressure
RAS	Renin angiotensin system
ENAC	Epithelial sodium channel
MMHg	Millimeter of mercury
HDL	High density lipoprotein
OHDS	Oral healthy diseases
CKD	Chronic kidney disease
BP	Blood pressure
NPN	Non protein nitrogenous
ATP	Adenosine triphosphate
CR CL	Creatinine clearance
GFR	Glomerular filtration rate
ESRD	End stage renal disease

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