

Sudan University of Science and Technology
College of graduate studies

**Determination of Kell (Kp^a and Kp^b), ABO and
Rh (D) blood group antigens phenotype among
ElNuba Sudanese Ethnic Group**

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(ABO, Rh (D), Kell (Kp^a and Kp^b

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
يَرْفَعُ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ بَرَكَاتٍ

صدق الله العظيم

dedication

- *To the soul of my first teacher, who taught me a lot?*

The Queen & king of my heart.....my mother & father

Who gives my faith to love my god & precious messenger Mohammed

- *To my great beloved to second mother Eman. and my brothers and sisters.*

- *To my precious uncle Ramadan Abd Elsaki.*

Which have a nice hand on my graduate and I become a human been

And all my family

- *To all my teachers*

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ملخص البحث

هذه دراسة وصفية، تحليلية في قبيلة النوبة السودانية لتحديد نسب تردد الاليل والشكل الظاهري لنظام ABO والعامل الريصي (D) و Kp^a و Kp^b في نظام كيل . استغرقت الدراسة ثلاثة شهور (من ابريل وحتى يونيو 2007م) . هدفت الدراسة لتكوين قاعدة معلومات لهذه القبيلة لتحديد مدي التداخل بينها و القبائل الاخرى والاستفادة منها في عمليات نقل الدم .بعد اخذ الموافقة من الاشخاص الذين سحب منهم الدم عن طريق الوريد , وتمت احاطتهم باهداف البحث , تم تجميع مائة عينة بحيث لا توجد صلة قرابة بينهم . تم تجميع العينات في وعاء سعته 2.5 مل يحتوي علي مادة مانعة لتجلط الدم تسمى (EDTA). تم فحص جميع العينات ذلك لمعرفة الزمر الوظيفية و الشكل الظاهري لنظام ABO والعامل الريصي باستخدام طريقة الشريحة و لنظام الكيل استخدمت طريقة حديثه جي — (gel Technique) (مانعة النفاذية) . ولقد تم تحديد نسب التشابه بين هذه القبيلة و القبائل السودانية والدول الاخرى بولسط هـ — انويج — كارد للتشابه .

واظهرت نتائج —دراسة ان نسبة تردد الزمر الوظيفية — دم التابعة ABO ان الزمرة الوظيفية لنظام تليها (56%) كانت الاكثر ترددا بنسبة A (28%) ثم B (28%) و قد كانت الزمرة الوظيفية (AB 14) هي O (3%) وفي نظام العامل الريصي نجد ان الزمرة الوظيفية . (3%) الاقل تردد Rh(D) كانت الاكثر شيوعا بنسبة

في نظام كيل . (95%) بنسبة Kell (Kp^a and Kp^b) نجد ان الزمرة الوظيفية (Kp^a) هي الاقل ترددا بنسبة 0.00%) , بينما نجد ان الزمرة الوظيفية (Kp^b) هي الاكثر ترددا بنسبة (100%) والشكل الظاهري لنظام كيل الاكثر ترددا هو $Kp(a-b)$ بينما لم نجد الشكل الظاهري .

Kp (a+b-) نجد ان هناك تشابه في الزمر الوظيفية لنظام ABO والعامل الريصي ونظام Kell بين القبائل السودانية التي تعيش في منطقة جغرافية واحدة وهذا قد يكون بسبب التزاوج بين هذه القبائل , وان الاختلاف الذي وجد في بعض القبائل يمكن ان يكون بسبب التجول , وعدم التقيد بمنطقة جغرافية محدودة.

abstract

This prospective and analytical study, aimed to determine the frequency of ABO, Rh (D) and Kell (Kp^a and Kp^b) antigens , and phenotypes, among ElNuba Sudanese tribe. Also aimed at established ABO, Rh (D) and Kell (Kp^a and Kp^b) blood group baseline data for this Sudanese tribe to determine the interaction between this tribe and other Sudanese tribes which will be useful in the blood transfusion, The study was conducted during three months (April to June, 2007), Following informed consent, a total of hundred venous blood samples were collected from unrelated individual into 2.5 ml EDTA containers. All samples were tested for ABO, Rh (D) and Kell (Kp^a and Kp^b) by using immune-diffusion gel technique for Kell, and, slide method for ABO and Rh (D).The antigens and phenotypes were determined. Similarities between this tribe and other Sudanese tribes and with other countries were calculated using Jaccard's coefficient of similarities.

The results obtained showed that, The O group was most common frequently occurred (56%) , followed by group A (28%) group B was found (14%) and least common was group AB (3%) .The frequency of the Rh (D) was most common frequently occurred (95%) .the frequency Kp^a antigen was least frequently (0.00%),while Kp^b was highest common frequently (100%) , The phenotype Kp(a+b-) was not found in this study. There was a marked similarities between the

Sudanese tribes that lived in same geographical area this could be due to intermarriage , while the difference that seen in some tribes could be most probably due to the wandering nature of these tribes.

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LIST OF ABBREVIATIONS

<u>Name</u>	<u>Abbreviation</u>
➤CGD	Chronic granulomatous disease
➤CPD-A	Citrate phosphate dextrose – adenine
➤cDNA	Cytoplasmic Deoxyribonucleic acid
➤C	Cytosine
➤DNA	Deoxyribonucleic acid
➤EDTA	Ethyle diamine tetra acetic acid
➤Fue	Fucose
➤Gal	Galactose
➤HDN	Hemolytic disease of the newborn
➤HBsAg	Hepatitis B surface Antigen
➤HCV	Hepatitis C Virus
➤HIV	Human immunodeficiency virus
➤ID	Immuno-diffusion
➤IgG	Immunoglobulin G
➤IgM	Immunoglobulin M
➤IAT	Indirect antiglobulin test
➤ISBT	International society of blood transfusion
➤K ₀	Kell null
➤K-1	Kell-1
➤Kp ^a	Kell-3
➤Kp ^b	Kell-4
➤KD	Kilo Dalton
➤LISS	Low ionic strength solution
➤mRNA	messenger Ribonucleic Acid
➤NEP	Neutalendopeptidase
➤PCR	Polymerase chain reaction
➤RBCs	Red blood cells
➤Rh	Rhesus blood group system
➤SPSS	Statistical Package for Social Science
➤T	Thymine
➤UK	United Kingdoms
➤USA	United States of America
➤WK	Weeks

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