

## *Dedication*

*This study was dedicated to the memory of my late father, whom I will never forget, my mother for her love and affection and my brothers and sisters for their help, support and patients.*

## ACKNOWLEDGEMENTS

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هذه دراسة وصفية ، تحليلية أجريت على مدى ثلاثة أشهر من مارس إلى يونيو ٢٠٠٧.

لتحديد نسبة وجود الزمر الوظيفية  $Kp^a$  و  $Kp^b$  , ABO, Rhesus (D) في قبيلة الشكرية السودانية.

تم تجميع مائة عينة دم، كل منها في وعاء ٥,٢ مل يحتوي على مانع للتخثر، من مائة شخص بعد أخذ الموافقة من الأشخاص الذين تم سحب الدم منهم من هذه القبيلة بحيث لا توجد صلة قرابة بينهم.

تم اختبار كل العينات، ABO و Rhesus (D) بواسطة طريقة الشريحة بينما  $Kp^a$  و  $Kp^b$  بواسطة تقنية الجل الحديثة.

كانت النتائج على النحو التالي: ABO كانت الزمرة الوظيفية O هي الأكثر ترددا بنسبة ( 58%) بينما كانت الزمرة الوظيفية A متوسطة التردد بنسبة (24%) تلتها الزمرة الوظيفية B بنسبة ( 14%) و الزمرة الوظيفية الأ قل ترددا وجدت AB بنسبة (4%).

الزمرة الوظيفية Rhesus (D) كانت الأكثر ترددا بنسبة (96%). الزمرة الوظيفية  $Kp^b$  هي الأكثر شيوعا بنسبة (100%). بينما لم نجد الزمرة الوظيفية  $kp^a$  (0%).

تم إدخال البيانات و فحصها و تحليلها بواسطة Microsoft office excel 2003 و SPSS ومن ثم تم تحديد نسب التشابه مع الإحصائيات الأخرى بواسطة قانون جاكرد للتشابه. تمت مقارنة النتائج المتحصلة في هذه الدراسة مع نتائج بعض القبائل السودانية في نفس الأنظمة فوجد أن هناك تشابه في بعض الزمر الوظيفية في نظام الدم ABO و Rhesus (D) مع بعض القبائل مما يشير إلى تشابه الأسلاف أو وجود سلف مشترك. ووجد أن هناك إختلاف مع بعض القبائل.

عندما قورنت النتائج مع الجنسيات الأخرى وجد أن نسبة فصيلة الدم من النوع ABO أقرب للدراسات التي أجريت على الجنسيات الافريقية مثل النيجيريين و الكينيين،و أيضاً قبيلة البنجاب في باكستان وأبعد من تلك الدراسات التي أجريت في الهند و البريطانيين. ونسبة وجود الزمر الوظيفية Rhesus (D) أقرب الى النسبة التي وجدت عند النيجيريين والامريكان السود، وأبعد من تلك التي وجدت في الكينيين، البريطانيين و الامريكان البيض. ونسبة فصيلة الدم من النوع  $Kp^a$  و  $Kp^b$  متشابهة للنسبة التي وجدت عند السود في الولايات المتحدة الأمريكية والبرازيل.

نخلص إلا ان التشابه بين القبائل السودانية التي تقطن في منطقة واحدة ناتج عن التزاوج بين هذه القبائل. بينما نجد أن القبائل التي تبعد عن بعضها البعض جغرافياً يوجد بينهما بعض الإختلاف.

## *Abstract*

This is a descriptive, prospective and analytical study which was conducted over a period of three months started from April to June 2007 to determine the frequencies of ABO, Rhesus (D), Kp<sup>a</sup> and Kp<sup>b</sup> antigens and phenotypes among Al-Shukria Sudanese tribe.

The study was carried out on 100 unrelated individuals blood samples, following informed consent each sample collected into 2.5 ml of blood EDTA containers.

All samples were tested for the presence of ABO and Rhesus (D) antigens using slide method and for Kp<sup>a</sup> and Kp<sup>b</sup> antigens using ID-Gel micro-typing system.

The frequency of ABO showed that the O blood group was found to be most frequent with frequency of (58%), whereas the A blood group was found (24%) followed by B blood group with frequency of (14%) and the least common was found to be AB blood group (4%). The Rhesus (D) was found to be (96%). Kp<sup>b</sup> was found to be 100%, while Kp<sup>a</sup> was not detected.

Data was entered, checked and analyzed using Microsoft office excel 2003 and statistical package for social sciences program (SPSS), and compared to other populations using Jacquard's similarity coefficient.

The results were compared with other Sudanese tribes and were found that there is a similarity in some ABO blood group and Rh (D) factor and there were differences with others.

When results were compared with other populations, revealed that the frequency of ABO was found to be close to people from African region such as Nigerian and Kenyan populations also similar to Punjab (Pakistan), and different from Indian and British populations.

The frequency of Rhesus (D) was found to be close to Nigerian population and Black Americans, and far from Kenyan, British and White Americans population.

The frequency for Kell-3 and Kell-4 in Al-Shukria Sudanese tribe was found to be close to that found in Blacks of United states and Brazil.

It was concluded that the similarities between Sudanese tribes result from intermarriage between them, while the differences between the tribes that leave in different geographical area.

## *List of abbreviations*

<b>Ab:</b>	Antibody.
<b>Ag:</b>	Antigen.
<b>AHG:</b>	Anti human globulin.
<b>AIHA:</b>	Autoimmune hemolytic anemia.
<b>EDTA:</b>	Ethylene Diamine Tetra Acetic acid.
<b>HDN:</b>	Haemolytic Disease of the Newborn.
<b>HTR:</b>	Haemolytic Transfusion Reaction.
<b>ID:</b>	Immunodiffusion.
<b>IgG:</b>	Immunoglobulin G.
<b>IgM:</b>	Immunoglobulin M.
<b>ISBT:</b>	International Society of Blood Transfusion.
<b>KD:</b>	Kilo Dalton.
<b>RBC:</b>	Red blood corpuscle.
<b>Rh:</b>	Rhesus Blood Group System.
<b>SPSS:</b>	Statistical Package for Social Sciences.
<b>UK:</b>	United Kingdom.
<b>USA:</b>	United States of America
<b>CGD:</b>	chronic granulomatous disease.
<b>CPK:</b>	Creatine Phosphokinase.
<b>2-ME:</b>	2 Mercapto ethanol.

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