

## **Dedication**

*-To my parents who enlighten my way with their passion, golden wisdom, and blessings.*

*-To my wife who gives the courage, strength and power to go forward in my career (Nuseiba Osman).*

*-To my lovely son ( Mohammed)*

*-To my teachers who always offer an unlimited support and help.*

*-To my brothers and sister.*

*-To my friends and students in past, present, and future in all parts of the world.*

## **Acknowledgment**

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Lastly all love to my family.

## الخلاصة

هذه الدراسة دراسة وصفية ، تحليلية أجريت في قبيلة الهوسا السودانية هدفت لتحديد نسب تردد الأليل (الأنجين) ، والأنماط الظاهرية لأنظمة (ABO, Rh(D) و Kidd. أجريت هذه الدراسة في الفترة من (أبريل الي يوليو، 2007). هدفت الدراسة لتكوين قاعدة معلومات لهذه القبيلة لتحديد مدى التداخل بينها وبين القبائل الاخرى بعد مقارنتها معها. استخدمت الدراسة الزمر الدموية لأنظمة ABO, Kidd والعامل الريصي كعلامات للهوية لتحديد الاصل الاحتمالي المشترك ولتساعد في عمليات نقل الدم . أخذت الموافقة من الأشخاص الذين سحب منهم الدم وقد تمت أحاطتهم بأهداف البحث. تم تجميع عينات من مائة شخص من القبيلة بحيث لا توجد بينهم صلة قرابة . تم تجميع كل عينة في وعاء سعة 2.5 مل يحتوي على مادة مانعة لتجلط الدم (EDTA). تم فحص جميع العينات لمعرفة الزمر الدموية لنظام ABO والعامل الريصي باستخدام طريقة الشريحة. اما فحص نظام Kidd فقد تم بطريقة حديثة تسمى جل (حساسة النفاذية) ومن ثم تم تحديد الزمر الدموية لقبيلة الهوسا وتمت مقارنتها مع الزمر الدموية لقبائل سودانية وقبائل من دول أخرى لتحديد نسب التشابه والتباين. تمت هذه المقارنات بواسطة قانون جاكرد للتشابه. وأظهرت نتائج الدراسة أن نسبة تردد الزمر الدموية التابعة لنظام ABO : زمرة (O) كانت الاكثر ترددا بنسبة 50% وتليها الزمرة (B) بنسبة 27% ثم تليها زمرة (A) بنسبة 17% واخيرا زمرة (AB) بنسبة 6% وهي الاقل ترددا. وقد كانت نسبة تردد انتجين (D) التابع للنظام العامل الريصي 94%. اما نظام Kidd نجد ان نسبة تردد انتجين Jk<sup>a</sup> كانت 92% ونسبة تردد انتجين Jk<sup>b</sup> كانت 48%.

خلصت الدراسة الى ان الزمر الدموية في قبيلة الهوسا تتباين مع الزمر الدموية لمعظم القبائل السودانية ولكنها تشابه تماما الزمر الدموية للزنج وقبائل غرب أفريقيا كما في القبائل النيجيرية. ربما يرجع ذلك لهجرتهم من غرب أفريقيا وعدم اختلاطهم مع القبائل الاخرى.

## Abstract

This is a prospective and analytical study, aimed to determine the frequency of ABO, Rh(D) and Kidd antigens, and phenotypes, among Husa Sudanese tribe. It also aimed at establishing ABO, Rh(D) and Kidd blood group baseline data for this Sudanese tribe and to determine the interaction between this tribe and other Sudanese tribes which this will be useful in the blood transfusion.

The study was conducted during three months (April to July, 2007). Following informed consent, a total of hundred venous blood samples were collected from unrelated individuals into 2.5 ml EDTA containers. All samples were tested for ABO and Rh(D) antigens by using the slide agglutination techniques. And Kidd antigens were tested by the immune-diffusion gel technique.

The results obtained showed that, The O group was most common ( 50% ), followed by group B ( 27%), group A was found ( 17% ) and least common was group AB ( 6%).

The Rh(D) antigen was (94%).

JK<sup>a</sup> was (92%) and JK<sup>b</sup> was (48%).

Regarding to Husa tribe there were slight similarities between other Sudanese tribes, this could be due to their migration from west Africa and the wandering nature of this tribe. There were marked similarities between Husa and west African tribes as in Nigerian tribes .

## **List of abbreviations**

Ab: Antibody.

.Ag: Antigen.

AIHA: Autoimmune hemolytic anemia.

cDNA: Complementary Deoxyribonucleic acid.

Fy Ag: Duffy associated glycoprotein.

GPB: Glycoprotein-B.

H-chain: Heavy chain.

HDN: Hemolytic Disease of The Newborn.

ID: Immunodiffusion.

IgA: Immunoglobulin A.

IgD: Immunoglobulin D.

IgE: Immunoglobulin E.

IgG: Immunoglobulin G.

IgM: Immunoglobulin M.

ISBT: International Society of Blood Transfusion.

L-Chain: Light chain.

Le: Lewis.

Lu: Lutheran.

LW: Landsteiner and Wiener.

mRNA: Messenger ribonucleic acid.

PCR: Polymerase Chain Reaction.

RBC: Red blood corpuscle.

Rh Ag: Rhesus antigen .

Rh: Rhesus blood group system.

RNA: Ribonucleic acid.

WHO: World Health Organization.

X :Chromosome X

HIV :Human immune deficiency virus .

HUT : Human urea transporter .

M : Mole .

D.W : Distilled water .

EDTA : Ethylen di amine tetra acetic acid .

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