

Sudan University of Science and Technology

College of Graduate Studies

**The frequency of ABO , Rhesus(D) and kell (K1&k2)
Blood Group Antigens & phenotypes among Halfaween
Sudanese tribe**

تردد الزمر الوظيفية والنمط الظاهري لأنظمة

kell, ABO والعامل الريصي في قبيلة الحلفاوين السودانية

By

Kheder Elamin Mohamed Abdallah

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Supervisor

Dr. Malik Hassan Ibrahim Mustafa

PH.D HEMATOLOGY

ASSISTANT PROFESSOR OF HEMATOLOGY (SUST)

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Dedication

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

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

*-To my brother and sisters who give the courage, strength and power to go
forward in my career.*

-To my friends .

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الخلاصة

هذه دراسة وصفية ، تحليلية أجريت في قبيلة الحلفاوين السودانية هدفت لتحديد نسب تردد الأليل (الانتجين) ، والأنماط الظاهرية لكل من ABO, Kell والعامل الريصي. استغرقت الدراسة ثلاثة شهور (من أبريل الي يوليو، ٢٠٠٧). هدفت الدراسة لتكوين قاعدة معلومات لهذه القبيلة لتحديد مدى التداخل بينها وبين القبائل الاخرى بعد مقارنتها. استخدمت الدراسة الزمر الوظيفية لهذه الانظمة كعلامات للهوية لتحديد الاصل المشترك المحتمل لتسهيل 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 سعته ٢.٥ مل يحتوي على مادة مانعة لتجلط الدم (EDTA). تم فحص جميع العينات لمعرفة الزمر الوظيفية ABO والعامل الريصي باستخدام طريقة الشريحة و Kell بطريقة حديثة تسمى جل (مانعة النفاذية) ومن ثم تم تحديد الزمر الوظيفية و تحديد نسب التشابه بين هذه القبيلة و القبائل السودانية والدول الاخرى بواسطة قانون جاكرد للتشابه .

وأظهرت نتائج الدراسة أن نسبة تردد الزمر الوظيفية التابعة لنظام ABO أن الزمرة الوظيفية O كانت الأكثر تردداً بنسبة (45%) تليها A بنسبة (31%) ، ثم B بنسبة (21%) وقد كانت الزمرة الوظيفية AB هي الأقل تردداً بنسبة (3%).

وفي نظام Kell تبين ان الزمر الوظيفية k2 هي الأكثر تردداً وقد كانت نسبتها (100%) وقد كانت الزمر الوظيفية K1 هي الأقل تردداً بنسبة (4%).

نجد أن هنالك تشابه في الزمر الوظيفية لنظام ABO ، نظام العامل الريصي و Kell بين القبائل السودانية التي تعيش في منطقة جغرافية واحدة وهذا قد يكون بسبب التزاوج بين تلك القبائل، وأن الاختلاف الذي وجد في بعض القبائل السودانية يمكن أن يكون بسبب الترحال وعدم التقيد بمنطقة جغرافية محدودة.

Abstract

This is a prospective and analytical study, aimed to determine the frequency of ABO, Rh(D) and kell antigens, and phenotypes, among Al halfaween Sudanese tribe. Also aimed at establish ABO, Rh(D) and Kell blood group baseline data for this Sudanese tribe to determine the interaction between this tribe and other Sudanese tribes which will be useful in 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 2.5 ml into EDTA containers from unrelated individual. All samples were tested for ABO and Rh(D) antigenes using the slide agglutination techniques, and kell antigenes were tested by immune-diffusion gel technique.

The results obtained showed that, The O group was most common frequently occurred (45%), followed by group A (31%), group B was found (21%) and the least common was group AB (3%).

The Rh(D) antigen was (87%).

K2 was (100%) and K1 was (4%).

There was a marked similarities between the Sudanese tribes that lived in the 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.

List of abbreviations

Ab: Antibody.

.Ag: Antigen.

AIHA: Autoimmune hemolytic anemia.

cDNA: Complementary Deoxyribonucleic acid.

CHO: Carbohydrates.

CML: Chronic myeloid leukemia.

DNA: 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.

B.G:Blood group

PCR: Polymerase Chain Reaction.

RBC: Red blood corpuscle.

Rh Ag: Rhesus Antigen

Rh: Rhesus blood group system.

RNA: Ribonucleic acid.

WHO: World Health Organization.

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