Dedication

To my mother who has taken care of

me since wasn't exist

To my father who devoted his

life for us to be what we are

To my brother and sister who stood beside me at every step

To every one close to me

ACKNOWLEDGEMENTS

With sincere thanks and gratitude I would like to acknowledge my supervisor Dr.Malik Hassan Ibrahim for his knowledge guidance and patience Iam truly thankful.

I would like to thank my family, especially my ancestors.

They blazed a path so bright that all I had to do was follow. They not only gave me the opportunity to dream, but to realize those dreams. It is on their backs and because of their prayers and strength that I have arrived at this point.

Heartfelt thanks are issued to hematology department and all of the members of the Sudan University, past and present, for their friendship, help, and motivation. I would just like to say, thanks to the directors and the staff of Nubian club, who helped me a lot and offered me the place for sample data collection.

I extend a special thanks to my uncles Adam and Abdoelkareem for believing in and encouraging me for the last five years. I am forever grateful.

I would also like to acknowledge a “talented” group of undergraduate researchers; Suzan and Khader; for their work and dedication to this project.

Finally, I would like to thank all blood donors who participated in the study for their great help and co-operation.

الخلاصـــــــــة

هذه دراسة وصفية ، تحليلية أجريت فى قـبيله الحلفـاوين هـدفت لتحديـد نسـب تردد الأليل والشكل الظاهري لانتيجينـات ال ABOو العامـل الريصـى فـى هـذه القبيله . لقد استغرقت الدراسة ثلاثـه اشـهر. هـدفت الدراسـة لتكـوين قاعـدة معلومـات لهـذه ا لقـبيله ومقارنتهـا مـع القبـائل السـودانية المختلفـة . أخـذت الموافقة من الأشخاص الذين سحب منهم الـدم وقـد تمـت احـاطتهم بأهـداف البحث. تم تجميع مائة عينة من افراد القبيلة بحيـث لا توجـد بينهـم صـلة قرابـة فى وعاء سعة 2.5 مل يحتوى على مادة مانعـة لتجلـط الـدم. تـم فحـص جميـع العينات لمعرفة الزمر الوظيفية لانتيجينات ال ABO بطريقة الشريحة و للعامــل الريصى 30 عينة باستخدام طريقة حديثة تسمى جل (مانعة النفاذيـة) وسـبعين عينه تم فحصها بطريقة الشريحة ومن ثم تم تحديـد الزمـر الـوظيفيه والشـكل الظاهرى لكل عينة . لقـد تـم تحليـل البيانـات بواسـطة برنامـج تحليـل الحـزم الاحصائيه وتـم تحديـد التشـابة بيـن القبـائل باسـتخدام قـانون جـاكرد للتشـابة . المعلومات الظاهرية التى تحصلت هى نسبه كل اليل.

اظهرت الدراسة ان الزمرة الوظيفية Oهي الاكثر ترددا(45%) تليها B (21%) A(13%) , واخيراً AB (3%) .

تبين ان الزمر الوظيفية c,e و D هى الاكثر ترددا وقد كانت نسبها (98%) , (91%) و (78%) على التوالى . بينما نجد ان نسبه C كانت متوسطة التردد (57%) و كانت E هي الاقل تردد(8%) .

اوضحت الدراسة وجود تشابة بين هذة القبيلة بعض القبايـل ووجـود اختلاف مـع قبائل اخري.

كما اظهرت الدراسـه عـدم وجـود علاقـه فـي تـوريث فصـائل الـدم الرائسـيه (A,B,O) و العامل الريصى.

Abstract

This community-based, prospective and analytical study was aimed to determine the frequencies of ABO & Rhesus blood group antigens and phenotypes among Halfaween tribe. The study also aimed to establishing ABO& Rhesus blood group baseline data for this tribe and compare it with other Sudanese tribes.

This study was conducted in different parts of Khartoum state during the period of three months, following informed consent, a total of one hundred venous blood samples were collected from unrelated individuals into 2.5 mls EDTA containers. The red blood cells (RBCs) were tested for ABO antigens by the slide agglutination techniques & common Rhesus antigens by the Particle gel immune-diffusion .Seventy (70) specimens were tested by the slide agglutination techniques. The alleles and frequencies were determined.

The antigen O was the most common antigen among the study group (45%), followed by B (21%), A (13%), and the least common antigen was AB (3%).

The $\bar{e}$, $\bar{c}$ and the D genes were the commonest alleles detected with frequencies of 98%, 91% and 87% respectively. The C allele and the E genes were the least frequent with 57% and 8.0% frequencies respectively.

Similarities between ALhalfaween and some Sudanese populations and differences with others were noticed.

The study revealed that there was no relation between the frequency of common Rhesus antigens and that of ABO blood group antigens.

List of abbreviations

.Ab: Antibody

.Ag: Antigen

.AIHA: Autoimmune hemolytic anemia

.cDNA: Complementary Deoxyribonucleic acid

.CHO: Carbohydrates

.CML: Chronic myeloid leukemia

DNA: Deoxyribonucleic acid

.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

.Le: Lewis

.Lu: Lutheran

.LW: Landsteiner and Wiener

.mRNA: Messenger ribonucleic acid

.PCR: Polymerase Chain Reaction

.RBC: Red blood corpuscle

Rh Ag: Rhesus associated

.Rh: Rhesus blood group system

.RNA: Ribonucleic acid

.UK: United Kingdom

Contents

List of tables

List of figures