

List of abbreviations

ALT	Alanine aminotransferase
AMA	Anti-mitochondrial antibody
ANA	Antinuclear antibody
Anti-dsDNA	Anti-double stranded DNA
Anti-HCV	Hepatitis C virus antibody
Anti-LKM-1	Anti-liver kidney microsomal type 1
Anti-LKM-2	Anti-liver kidney microsomal type 2
Anti-LKM-3	Anti-liver kidney microsomal type 3
Anti-RNP	Anti-ribonucleoprotein
ASMA	Antismooth muscle antibody
AST	Aspartate aminotransferase
CAH	Chronic active hepatitis
CENP-A	Centromere protein A
CLD	Chronic liver disease
CRP	C-reactive protein
CTD	Connective tissue diseases

CTL	Cytotoxic T cell
CTM (-) C	COBAS TaqMan negative control
CYP 2C9	Cytochrome P450 2C9
CYP 2D6	Cytochrome oxidase P450 2D6
DNA	Deoxyribonucleic acid
EB	Elution buffer
EIA	Enzyme immunoassay
ELISA	Enzyme-linked immunoabsorbant assay
ENA	Extractable nuclear antigens
ESR	Erythrocyte sedimentation rate
FITC	Fluorescein iso-thiocyanate conjugate
HAV	Hepatitis A virus
HBsAg	Hepatitis B surface antigen
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HCV H (+) C	HCV high positive control
HCV QS	HCV quantitation standard
HCV L(+)C	HCV low positive control

HDV	Hepatitis D virus
HEV	Hepatitis E virus
HFV	Hepatitis F virus
HGV	Hepatitis G virus
HIV	Human immunodeficiency virus
HS.	Highly significant ($P < 0.01$)
IFN	Interferon
IgA	Immunoglobulin A
IgG	Immunoglobulin G
IgM	Immunoglobulin M
IVD	In vitro diagnostics
LCR	Ligase chain reaction
LD	Lactate dehydrogenase
LKMA	Liver kidney microsomal antibody
MC	Mixed cryoglobulinemia
MDH	Malate dehydrogenase
MGP	Magnetic glass particles

NASBA	Nucleic acid sequence-based amplification
NK cell	Natural killer cell
NS.	Non-significant ($P>0.05$)
OR	Odds ratio
ORDAC	Over-range dilution and correction
PBC	Primary biliary cirrhosis
PBS	Phosphate buffer saline
PCR	Polymerase chain reaction
PEG-IFN	Pegylated interferon
PG WR	COBAS AmpliPrep/COBAS TaqMan wash reagent
RF	Rheumatoid factor
RIBA	Recombinant antigen immunoblot assay
RNA	Ribonucleic acid
RRR	Relative risk ratio
S.	Significant ($P<0.05$)
SDA	Strand displacement amplification
SLE	Systemic lupus erythematosus

SPU	Sample processing unit
SVR	Sustained virologic response
TMA	Transcription-mediated amplification
TTV	Transfusion transmitted virus

List of symbols

μl	Microliter
IU/L	International Units per Liter
ml	Milliliter
mmol/L	Millimoles per Liter
°C	The degree Celsius

List of tables

Table No.	Title	Page
Table(1):	Descriptive statistics of AST values in three groups.	39
Table(2):	Descriptive statistics of ALT values in three groups.	40
Table(3):	Correlation coefficient between different parameters in PEG-IFN groups.	41
Table (4):	Correlation coefficient between different parameters in liver support groups.	43
Table (5):	Positivity of autoantibodies and Cryoglobulins in PEG-IFN group in comparison to control group (non-viral hepatitis patients).	44
Table(6):	Positivity of autoantibodies and cryoglobulins in liver support group in comparison to control group (non-viral hepatitis patients).	45
Table(7):	Positivity of autoantibodies and Cryoglobulins in PEG-IFN group in comparison to liver Support group.	46
Table (8):	Distribution of autoantibodies in three studied groups.	47
Table (9):	Relative risk ratio (RRR).	48

List of figures

Fig. No.	Title	Page
Fig.(1):	Comparison between control group, liver support group and PEG-IFN group as regards AST values.	39
Fig. (2):	Comparison between control group, liver support group and PEG-IFN group as regards ALT values.	40
Fig. (3):	Linear regression analysis showing positive correlation between AST values and ALT values among PEG-IFN group.	41
Fig. (4):	Linear regression analysis showing negative correlation between AST values and HCV RNA values among PEG-IFN group.	42
Fig. (5):	Linear regression analysis showing negative correlation between AST values and PEG-IFN dose among PEG-IFN group.	42
Fig. (6):	Linear regression analysis showing positive correlation between AST values and ALT values among Liver support group.	43
Fig.(7):	Positivity of autoantibodies and Cryoglobulins in PEG-IFN group in comparison to control group.	44

Fig.(8):	Positivity of autoantibodies and Cryoglobulins in liver support group in comparison to control group.	45
Fig.(9):	Positivity of autoantibodies and Cryoglobulins in PEG-IFN group in comparison to liver Support group.	46
Fig.(10):	Distribution of autoantibodies in three studied groups.	47



Faculty of Women for
Arts, Science and Education
Botany Department

Evaluation of autoantibodies in chronic hepatitis C Egyptian patients

*A Thesis Submitted in Partial Fulfillment for the Requirements of the
Master Degree in Science*

(Microbiology)

BY

Aliaa Mohamed Seif Elden Abd Elkader

BSC. Microbiology, 2006

Supervised by

Late Dr. Sohair Abdel-Aziz Mostafa

Prof. of Microbiology, Botany Department, Faculty of Women for Art,
Science and Education, Ain Shams University

Dr. Zeinab Mohamed Hassan kheiralla

Prof. of Microbiology, Botany Department, Faculty of Women for Art,
Science and Education, Ain Shams University

Dr. Mohga Abd El Fatah Ebrahim

Consultant of Clinical Pathology, Ain Shams University Specialized
Hospital

Dr. Shimaa Mohamed Abd El Salam

Lecturer of Microbiology, Botany Department, Faculty of Women for Arts,
Science and Education, Ain Shams University

Botany Department

**Faculty of Women for Arts, Science and Education, Ain Shams
University
(2014)**

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالُوا سُبْحَانَكَ
لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا
إِنَّكَ أَنْتَ
الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم
سورة البقرة الآية
(٣٢)





Contents

<u>Subjects</u>	<u>Page</u>
• List of tables	1
• List of figures	II
• Introduction	IV
• Aim of work	V
• Abstract	VI
I. Review of literature	1
Hepatitis viruses	1
1.1 Hepatitis A	1
1.2 Hepatitis B	2
1.3 Hepatitis D	3
1.4 Hepatitis E	4
1.5 Hepatitis of unknown etiology	4
1.5.1 Hepatitis F	5
1.5.2 Hepatitis G	5
1.5.3 Transfusion Transmitted virus	5
2. Hepatitis C virus	5

2.1	Routes of transmission of hepatitis C	6
2.2	Natural history and clinical features	7
2.3	Laboratory diagnosis of hepatitis C	9
2.4	Treatment	10
3.	Autoimmunity and autoantibodies	16
3.1	Antinuclear antibody	18
3.2	Smooth muscle antibody	19
3.3	Mitochondrial antibody	20
3.4	Antiparital cell antibody	20
3.5	Liver kidney microsomal antibody	22
3.6	Cryoglobulins	22
II.	Subjects and Methods	24
1.	Liver function tests	26
2.	Detection of HCV viremia using (PCR)	28
3.	Detection of autoantibodies	32
4.	Cryoglobulins test	35
	Statistical analysis	36