

Fayoum University Faculty of Science Chemistry Department.

Evaluation of Plasma Hyaluronic acid and Chondrex (YKL-40) levels as noninvasive fibrotic markers in patients with liver fibrosis

By

Ola Nabil Sayed Ahmed

A thesis submitted in partial fulfillment of the requirements for the degree of doctor of philosophy

In

Biochemistry

Department of Chemistry

Faculty of Science, Fayoum University

2013



Evaluation of Plasma Hyaluronic acid and Chondrex (YKL-40) levels as noninvasive fibrotic markers in patients with liver fibrosis

By

Ola Nabil Sayed Ahmed

B.Sc. (Hons.) in BioChemistry 2004 M.Sc. in BioChemistry 2009

Supervision Committee

1.	Prof. Dr. Hadeer Mohamed Bakeer
	Professor of Organic Chemistry, Chemistry Department, Faculty of
	Science, Fayoum University.
	Signature
2.	Prof. Dr. Abdullah Morsy Desoky
	Professor of Clinical Chemistry, Clinical Chemistry Lab, Theodor
	Bilharz Research Institute.
	Signature
3.	Prof. Dr. Soha Mohamed Hamdy
	Professor of Biochemistry, Chemistry Department, Faculty of
	Science, Fayoum University.
	Signature

ACKNOWLEDGMENT

I'm gratefully acknowledging my indebtedness to **prof. Dr. Hadeer Mohammed Bakeer** professor of Organic Chemistry, Faculty of Science, Fayoum University for her constant encouragement, valuable guidance and supervision throughout this investigation.

Also, I would like to express my deepest and thankfulness to **Prof. Dr. Abdullah Morsy Desoky** Professor of Clinical Chemistry, Clinical Chemistry Lab, Theodor Bilharz Research Institute for his close supervision, skilful technical assistance and useful suggestion. Special thank to **prof. Dr. Mona Mohamed Hassan** for continuouse encouragement, valuable interpretation, fruitful discussion during the progress and finish of the research work.

I wish to express my fruitful thanks and sincere appreciation to **Prof. Dr. Soha Mohamed Hamdy** professor of Biochemistry, Chemistry Department, Faculty of Science, Fayoum University for academic supervision, scientific discussion, helpful guidance, friendship, continuous encouragement and for her valuable support through this work.

The author also wishes to thank her colleagues working for Chemistry Department, Faculty of Science, Fayoum University who gave hand during conducting this wok.

I never forget sacrifice giving by my mother, father, sisters and brother during the whole period of study.

CONTENTS

	Page
LIST OF TABLES	Ι
LIST OF FIGURES	II
LIST OF ABBREVIATION	V
INTRODUCTION	1
AIM OF WORK	5
LITERATURE REVIEW	6
Liver fibrosis	7
Evaluation of liver fibrosis	11
Liver biopsy	12
Serum markers	16
Indirect markers of liver fibrogenesis	18
Direct markers of liver fibrogenesis	30
Panels with Indirect & Direct markers of liver fibrosis	42
Transient Elastography TE	50
Fibrosis markers to assess effect of treatment	51
Fibrosis markers to predict disease progression	55
SUBJECT AND METHODS	57
RESULTS	81
DISCUSSION	118

SUMMARY AND CONCLUSSION	132
REFERENCES	134
ARABIC SAMMARY	١