Phytochemical and biological investigations of *Coccoloba uvifera*, L. (Polygonaceae)

Thesis

Submitted in Partial Fulfillment of the Requirements for the

Master degree

In Pharmaceutical Sciences
(Pharmacognosy**)**

By

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Cairo- Egypt
2020

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Acknowledgments

Firstly, thanks to **ALLAH** who has granted me many graces and blessed me by his generosity and mercy to accomplish this work.

It is a pleasure to express my deepest gratitude, sincere thanks and profound appreciation to **Prof. Dr. Nahla A. Ayoub** for setting an example to what a sincere professor, scientist, and advisor should be. I'd like to express my deep gratitude to her for supervising this study. **Assoc. Prof. Mohamed El-Shazly** for his kind help, valuable scientific advice, and great efforts throughout this work. **Assoc. Prof. Haidy Gad** for her continuous support, advice, and her kind help and supervision. **Dr. Reham El-Sharawy**, Lecturer of Pharmacognosy, Department of Phytochemistry and Plant Systematics, National Research Centre, for her supervising and following up the practical work, suggesting the titled plant, and for her continuous encouragement. **Dr. Rasha Ali Radwan**, Lecturer of Biochemistry, Department of Biochemistry, Sinai University-Kantara branch, for her efforts, support, assistance in the biological assays and revising the thesis.

I would like to express my profound gratitude to my professors and colleagues from the Department of Pharmacognosy and Medicinal Plants, Heliopolis University for Sustainable Development, especially Dr. Mouchira Choukry, Dr. Mohamed Nabil, Dr. Sameh Fikry for their cooperation, kind advice and support.

Special thanks and debt of gratitude to my parents for their continuous support, encouragement, help, sacrifices, and prayers throughout my whole life, also I would like to thank my brother and my family for their support and encouragement.

والحمد لله رب العالمين.....

Fatma Abdel Hakim Mohamed Ahmed

2020

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List of Abbreviations

^{1} H-NMR: ^{1}H Nuclear Magnetic Resonance

^{13} C-NMR: ^{13}C Nuclear Magnetic Resonance

AAPH: 2,2′-azobis 2 amidino propane dihydrochloride

ABTS: 2,2′-Azino-bis(3-ethylbenzthiazoline-6-sulfonic acid)

AchE: Acetyl Cholinesterase

Amm.: Ammonia

α-MSH: α-Melanocyte-stimulating hormone

BAW: Butanol:Acetic acid:Water

BSLA: Brine shrimp lethal assay

BuChE: Butyrylcholinesterase

BuOH: Butanol

CB: Cytochalasin B

CC: Column chromatography

CCL_2: The chemokine (C-C motif) ligand 2

CoPC: Comparative Paper Chromatography

CLE: *Coccoloba uvifera* leaves extract

***d*:** Doublet

***dd*:** Doublet of doublets

DMSO-d6: Deutrated dimethylsulfoxide

DNS: Dinitrosalicylic acid

DPPH: 2,2-Diphenyl-1-picrylhydrazyl

ECM: Extracellular matrix

EDTA: Ethylene diamine tetraacetate

EtOH: Ethyl alcohol

FALGPA: N-[3-(2-furyl)acryloyl]-Leu-Gly-Pro-Ala

FMLF: Formyl-methionyl-leucyl-phenylalanine

g: Gram

h: Hour(s)

H_3BO_3: Boric acid

HOAc-6: 6% Acetic acid

IC_{50}: The half-maximal inhibitory concentration

IL-1α: Interleukin 1alpha

***J* value:** Coupling constant

LD_{50}: The amount of the substance required to kill 50% of the test population

L-DOPA: L-3,4-Dihydroxyphenylalanine

LNCaP: Prostate cancer androgen-sensitive cell line

LPS: Lipopolysaccharide

M.wt. Molecular weight

m: Meter

MeOH: Methanol

MIC: Minimum inhibitory concentration

ml: Milliliter

mm: Millimeter

mM: Millimole

MMPs: Matrix metalloproteinases

MTT: 3-(4,5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide

NaOAc: Sodium acetate

NMR: Nuclear magnetic resonance spectroscopy

OD550: Optical density at wavelength 550 nm

PC: Paper Chromatography

PCa: Prostate cancer

PL: Pancreatic lipase

PPL: Porcine pancreatic lipase

ppm: Part per million

Prep. PC: Preparative paper chromatography

Rev/ug: Revertants/ug

R_f: Retention factor

ROS: Reactive oxygen species

rpm: Revolutions per minute

***s*:** Singlet

SD: Standard deviation

S.E.M.: Standard error of the mean

***t*:** Triplet

TES: Tris(hydroxymethyl)-methyl-2-aminoethane sulfonate

THP-1: human acute monocytic leukemia cell line

TLC: Thin layer chromatography

TMS: Tetramethylsilane

TNF-α: Tumor necrotic factor-α

UV: Ultraviolet

δ: Chemical shift

λ: Wavelength

μ: Micro

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Abstract

Phytochemical and biological investigations of *Coccoloba uvifera* L. (Polygonaceae).

Key Words: *Coccoloba uvifera*, Polygonaceae, anti-diabetic, anti-obesity, anti-aging, anti-inflammatory.

Six compounds were isolated from the aqueous ethanolic leaves extract of *Coccoloba uvifera* L. The structures of the compounds were identified on the basis of spectroscopic data UV, ^{1}H-NMR, ^{13}C-NMR. Also, biological investigations were done on the extract and the isolated compounds, which showed a significant antidiabetic activity through α-amylase inhibition, anti-obesity activity through pancreatic lipase inhibition, anti-aging and anti-inflammatory activities.