Compositional analysis of *withania coagulans* for its bioactive compounds

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COMPOSITIONAL ANALYSIS OF *WITHANIA COAGULANS* FOR ITS BIOACTIVE COMPOUNDS

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He knows what is (presently) before them and what will be after them, and they encompass not a thing of His knowledge except for what He wills.

(Al-Quran)

DECLARATION

I Amna Tabassum D/O Khalid Jamil Gohar ID: 15004140004, Session 2015-2017 hereby declare that the matter printed in the thesis titled **"COMPOSITIONAL ANALYSIS OF *WITHANIA COAGULANS* FOR ITS BIOACTIVE COMPOUNDS"** is my own work and has not been printed, published and submitted as research work, thesis or publication in any form in any University, Research institution etc. in Pakistan or Abroad.

Dated: _____ _____

( )

RESEARCH COMPLETION CERTIFICATE

Certified that the research work contained in this thesis titled, **"COMPOSITIONAL ANALYSIS OF *WITHANIA COAGULANS* FOR ITS BIOACTIVE COMPOUNDS"** has been carried out and completed by **Amna Tabassum, ID: 15004140004.** The quantum and the quality of the work contained in this thesis is adequate for the award of Degree of MS/M. Phil.

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DEDICATION

Dedicated to my loving parents and teachers, without their knowledge, wisdom, and guidance, I would not have met the goals and reach my dreams!

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ABSTRACT

Many plants have been recounted to have therapeutic uses to treat and cure several human health diseases and mortalities. *Withania coagulans (W. coagulans*) is one of these medicinal plants which is known to have phytochemical properties and pharmacognostic effects. This plant is usually notorious as "Vegetable rennet" or "Indian cheese maker" because of milk coagulating properties due to enzyme Withanin. Phytochemical screening exposes that plant contains steroids, alkaloids, tannins, flavonoids, saponins and phenolic compounds. The Total phenolic content assay (TPC) and DPPH method were demonstrated to study antioxidant study of methanolic, aqueous and n-hexane extract of *W. coagulans.* The DPPH activity outcomes showed that aqueous extract shows highest concentration of the phenolic compounds as compared to n-hexane and methanolic extracts. The TPC assay represented that maximum absorbance is gained by the aqueous extract (4.2587), which was almost double than the methanolic extract (1.9219) and four times the n-hexane extract (0.9206). Antibacterial activity of all the extracts of *W. coagulans* was executed against the four different pathogens using the test control Amoxycillin by agar well diffusion method. The methanolic sample of concentration 100mg/ml shows zone of inhibition (15mm) which is maximum against the *Pseudomonas aeruginosa.* The n-hexane extract of concentration 150mg/ml shows great zone (13mm) against the *Streptococcus mutans.* The aqueous extract of concentration 50mg/ml shows (13mm) as highest zone of inhibition for the *Escherichia coli.* Results suggested *W. coagulans* has strong potential to fascinate the scientific community by its medicinal presentations and can be reflected as one of the important medicinal plant.

INTRODUCTION

1.1 FAMILY SOLANACEAE

It is one of the major family in all groups of plants. The Solanaceae is well-known as Nightshade family. There are about 100 genera and 3000 species in this family. Herbs, shrubs, vines and some trees are present among the Solanaceae. The plants may be sometimes annuals, biennieals or perenials. The member of this family are distributed in tropical, subtropical and temperate regions of different parts of world. The members are well known among all due to have the medicinal potential and uses related to human fitness. (Hunziker, 2001)