



Faculty of Science
Botany Department

Molecular Taxonomy of Some Species of Genus *Dracaena* and Some Related Taxa

A Thesis Submitted in Partial Fulfillment for the Degree of Master of Science in Botany
(Taxonomy of Flowering Plants)

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالُوا سُبْحٰنَكَ لَا عِلْمَ

لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ

الْعَلِيمُ الْحَكِيمُ



Special Dedication

To the spirit of

Late Professor Dr. Sayed Farag Khalifa

For everything he has done for us.

Your sons and students

Mohamed Tantawy

Maged Abou-El-Enain

Eman Karakish

ghada Ali



Special Dedication

**To Academy of Scientific Research and
Technology**

For funding this work

ghada Ali



Dedication

To my Dear Parents

For their Pray to Allah for me,

For their Endurance and Loving

ghada Ali

Approval sheet

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Declaration

This thesis has not been previously submitted for
any degree at this or any other University.

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Abstract

Macro/micro-morphological features and macro / micro-molecular characteristics were investigated in 16 species belonging to the following genera viz. *Dracaena* (seven species), *Agave* (three species), *Cordyline* (two species), *Ruscus* (one species), *Sansevieria* (one species) and *Yucca* (two species). UPGMA clustering method was established and cophenetic correlation coefficient values were calculated by using the program NTSYS-pc 2.2 based on: **a)** 222-macro/micro-morphological character states (136 gross morphology; 61 stem & lamina anatomy and 30 SEM of abaxial lamina epidermis). **b)** 128 macro / micro-molecular character states (42 isozymes & 86 PCR-ISSR). **c)** The above-mentioned character states combined i.e. 300.

The data extracted from the present study showed that leaves amphistomatic; stomata anomocytic or iris type, sunken (*Agave*), or raised, less frequent on adaxial surfaces; cuticular flanges present sometimes; trichomes absent; lamina sculpture was colliculate, sulcate, reticulate, rugose, ruminant, tuberculate or lineate; epicuticular waxes and cuticle of both ab- and adaxial lamina surfaces were extremely variable. The produced bands by each of isozymes and PCR-ISSR techniques were species-specific;

considered as fingerprints in terms of number and position; useful in discrimination most of the studied taxa. Inconsistency between the morphological and molecular data in delimitation of the studied taxa was observed. A reassessment of taxonomic relationships of the studied taxa was made by comparing the produced classification with the current systems.

Contents	Page
Preface	۱
Scope of the Thesis	۵
Part I	
Introduction	
Section A: Introduction	
I- Systematy	۶
II- Literature Review	۱۹
i. Macromorphological Studies	۱۹
ii. Micromorphological Studies	۲۰
iii. Biochemical and Molecular Markers	۲۴
a. Isozyme Markers	۲۶
b. Molecular Fingerprinting	۲۹
iv. Numerical Taxonomy	۳۳
Section B: Materials and Methods	
I- Materials	۳۷
II- Methods	۳۹
i. Macromorphological Investigation	۳۹
ii. Micromorphological Investigation	۳۹
۱- Stem and Lamina Anatomy	۳۹
۲. Abaxial Lamina Epidermal Characteristics (LM & SEM)	۴۰
iii. Molecular Investigation	۴۱
۱. Isozymes	۴۱
۲. Inter Simple Sequence Repeats (ISSR)	۴۶
iv. Numerical Analysis	۴۸

Part II		
Results		
Section A: Macro / Micro-morphological Characters		
Genus (1): <i>Dracaena</i>		
1,1,1	<i>D. draco</i>	53
1,2,2	<i>D. fragrnas</i>	57
1,3,3	<i>D. marginata</i>	61
1,4,4	<i>D. ombet</i>	65
1,5,5	<i>D. reflexa</i>	69
1,6,6	<i>D. sanderiana</i>	73
1,7,7	<i>D. surculosa</i>	77
Genus (2): <i>Agave</i>		
2,1,8	<i>A. americana</i>	81
2,2,9	<i>A. franzosinii</i>	85
2,3,10	<i>A. sisalana</i>	89
Genus (3): <i>Cordyline</i>		
3,1,11	<i>C. fruticosa</i>	93
3,2,12	<i>C. stricta</i>	97
Genus (4): <i>Ruscus</i>		
4,1,13	<i>R. aculeatus</i>	101
Genus (5): <i>Sansevieria</i>		
5,1,14	<i>S. trifasciata</i>	105
Genus (6): <i>Yucca</i>		
6,1,15	<i>Y. aloifolia</i>	109
6,2,16	<i>Y. guatemalensis</i>	113

Section B: Macro / Micro-molecules	
B١. Macromolecules	١١٧
B٢. Micromolecules	١٢٧
Section C: Numerical Analysis	
C١. Macro / Micro Morphological Characters	١٣٩
C٢. Macro / Micro Molecular Characters	١٤٢
C٣. Combined Characters	١٤٥
Part III	
Discussion	
Section A: Morphological Study	١٤٩
Section B: Molecular Study	١٥٩
Section C: Numerical Analysis	١٦٠
English Summary	١٨٤
References	١٩٠
Arabic Summary	

List of Plates

Title: Macro- and Microphotographs of Whole Plant, Stem & Lamina Anatomy and Lamina Abaxial Surface View (LM & SEM).

Plate	Taxa	Page
I	<i>Dracaena draco</i>	๕๖
II	<i>D. fragrans</i>	๖๐
III	<i>D. marginata</i>	๖๔
IV	<i>D. ombet</i>	๖๗
V	<i>D. reflexa</i>	๖๘
VI	<i>D. sanderiana</i>	๖๙
VII	<i>D. surculosa</i>	๗๐
VIII	<i>Agave americana</i>	๗๔
IX	<i>A. franzosinii</i>	๗๗
X	<i>A. sisalana</i>	๙๒
XI	<i>Cordyline fruticosa</i>	๙๖
XII	<i>C. stricta</i>	๑๐๐
XIII	<i>Ruscus aculeatus</i>	๑๐๔
XIV	<i>Sansevieria trifasciata</i>	๑๐๗
XV	<i>Yucca aloifolia</i>	๑๑๒
XVI	<i>Y. guatemalensis</i>	๑๑๖
XVII	Isozyme Profiles of the Studied Taxa.	๑๒๒
XVIII	ISSR Profile of the Studied Taxa.	๑๒๒
XIX	Comparison of the produced UPGMA phenograms based on the macro/micro morphology ๑; macro/micro molecular ๒; combined data set ๓.	๑๖๓