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Assessment of Taxonomic Relationships Between Family Chenopodiaceae Vent. and Amaranthaceae Juss. in Egypt

A Thesis submitted for the Degree of Master of Science
In Botany (Taxonomy of Flowering Plants)

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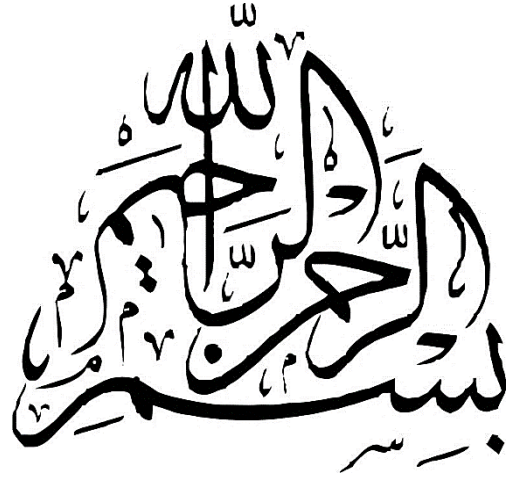
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« وَقُلِ اعْمَلُوا فَسَيَرَى
اللَّهُ عَمَلَكُمْ وَرَسُولُهُ
وَالْمُؤْمِنُونَ »

[التوبة: 103]

Declaration

This thesis has not been submitted for a degree
of this or any other University

Aya Tarek

Dedication



I dedicate this work to the soul of my grandfather may Allah have mercy on him; to my parents for everything they have done for me; to my uncle Salah for his love and support& to my lovely brother and sisters.

Aya Tarek

Acknowledgement

First of all, I'm grateful to Allah, the most beneficent and most merciful. I would like to express my sincere gratitude to **Prof. Dr. Mohamed El-Sayed Tantawy Khalifa, Dr. Alsafa Hassan Mohamed Hussein and Dr. Mohamed Abd Elfattah Salim** (Botany Department, Faculty of Science, Ain Shams University) for suggesting the research point, collecting and identifying the studied taxa, following up the practical part, writing and revising the manuscript.

Thanks to **Prof. Dr. Hanaa Mustafa Shabbara** (Head of Botany Department, Faculty of Science, Ain Shams University).

Sincere thanks offered to all staff members and colleagues of Taxonomy unit, Botany Department, Faculty of Science, Ain Shams University.

Special thanks to **Dr. Mariam Ibrahim** Lecturer of Plant Taxonomy, Botany Department, Faculty of Science, Ain Shams University for her kind help in drawing the anatomical diagram sectors and supporting me at a personal level.

Abstract

Chenopodiaceae and Amaranthaceae are closely related families of Caryophyllales and recently referred to Chen-Am alliance. They were used to be treated as two separate taxonomic entities but recently they merged in one family (Amaranthaceae *s. l.*). The two families are of cosmopolitan distribution and rather uncertain systematic position, comprising approximately 169 genera and 2400 species.

Macro, micromorphological characters *viz.* (whole plant, stem and lamina micro-characters, ab- and adaxial lamina epidermal characteristics as well as palynological characteristics (LM and SEM) of 35 studied taxa (representing 14 genera, 29 species and three sub-species belonging to Chenopodiaceae, four genera and six species to Amaranthaceae) are investigated, extracted and collected in cumulative tables, figures and plates.

The specific objective of the present study is to extract the most significant macro, micromorphological as well as palynological characters of the studied taxa and estimating the congruence of these characters as fundamental one in reassessment of the alliance relationship between Chenopodiaceae and Amaranthaceae

The obtained macro & microcharacters of stem and leaf are considered diagnostic at the generic and specific levels (e.g., stem

and leaf outline, normal and abnormal aspects of secondary growth, pericyclic fibers, leaf types, kranz-anatomy types, presence of vesicular trichomes, crystals types and stomatography). SEM analysis revealed five lamina surface sculpture and five types of epicuticular wax ab-& adaxially. The pollen characters of the studied taxa are considered highly diagnostic at the generic and specific levels *viz.* pollen pores number, pore size and exine ornamentation, the studied taxa of Chenopodiaceae and Amarantaceae are categorized in four pollen types. The obtained data facilitate the construction of artificial keys for easy delimitation between the studied taxa.

Keywords: Amarantaceae, Chenopodiaceae, anatomy, epidermal characters, pollen morphology

Contents

Contents	Page
Scope of thesis	1
Preface	2
Part 1	
Section A: Historical introduction	
I- Systematy	7
a- Supra familial classification	7
b- Infra familial classification	14
II- Literature review	20
A-Macromorphological study	20
B- Micromorphological study	23
i. Stem and lamina anatomical characteristics	23
ii. Lamina epidermal characteristics	31
iii. Palynological study	34
Section B: Materials and methods	
I- Materials	38
II- Methods	42
A- Macromorphological investigation	42
B- Micromorphological investigation	42
i. Stem and lamina anatomical characteristics	42
ii. Epidermal characteristics (LM & SEM)	43
iii. Palynological characteristics (LM & SEM)	44