Name of Candidat: Faten Yousef Abd El-Baky El-Limony
Degree M.Sc **Title of Thesis**

Biosystematic study of the genus *Veronica* L. "Section Beccabunga" in Egypt

Supervisors:
1. Prof. Dr. Refat M. Ali
2. Prof. Dr. Monier M. Abd El- Ghani
3. Ass. Prof. Dr. Mohamed Anwar Karam
Approval: 11/11/2009 **Department: Botany**

Abstract

Veronica **is the largest genus family *Plantaginaceae*, with about 450 species was formerly classified in the family *Scrophulariaceae*. It is represented in Egypt by two sections" section: *Beccabunga*" and "section: *Alsinebe* (=*Pocilla*)". This study focused on section: *Beccabunga* as little attention has been paid to the taxonomic studies of this genus in Egypt and to solve the taxonomic problem existed in that section.**

The regions surveyed were: Mediterranean coastal region (Mm): Borg El-Arab, Abo-Qier, Rashid; Nile Valley (N_V): El Beheira Governorate, Mahmudiya, Cultivated land of Fayoum governorate, cultivated land of Beni suef Governorate.

Identification of the collected specimens was confirmed by Prof. Dr. Loutfy Boulos and collections kept in the Egyptian Herbaria: CAI, CAIM, CAIRC, in addition to Fayoum University Herbarium (proposed FAY), and by personal communications with Prof. Dr. Dirk Albach.

The present study aims at a critical revision of the genus *Veronica "*Section *Beccabunga"* in Egypt in an attempt to unravel some confusion in its taxonomic complexity.

This will be achieved by

1. The morphological description of the collected taxa using the most observed character states summarized in:

a. **Leaves shape varied between (lanceolate, ovate, ovate-lanceolate, elliptic-lanceolate, linear-lanceolate, oblanceolate, elliptic-ovate or rhombic).**

b. **Inflorescence (position, arrangement of inf., density, length of peduncle, length of inf., length of pedicel at flowering and fruiting time).**

c. **Capsule (shape, apex, surface, length and width).**

2. The use of randomly amplified polymorphic DNA (RAPD) as a molecular marker.

The molecular investigations (RAPD) carried out on DNA of seed germinated and incubation at temperature 20-25 C° and light that is requirements for germination of *Veronica*, it was amplified with random synthetic-5-oligonucleotide primers/10 bases each. The retrieved RAPD polymorphic bands showed a better resolution of the closely allied *Veronica* species.

3. Numerical analysis of the studied taxa based on morphological and molecular data for assessment the relationship of taxa.

The morphological description scored 71 character states; the molecular data scored 206 RAPD fragments and amalgamated the morphological and molecular data scored 277, the analysis was performed for both RAPD and morphological data using NTSYS-pc2, the data matrix of was used for (UPGMA) clustering. Resulted the distinctness of *V. beccabunga* in a separate cluster away from the other taxa agreed with the classification of section *Beccabunga* into two subsections: subsection *Beccabunga* (=*Eubeccabunga*) including *V. beccabunga* and subsection *Anagallides* containing the other nine taxa.

Conclusion

1. **The occurrence of *V. anagallis-aquatica* var. *anagallis-aquatica* and *V. anagallis-aquatica* var. *nilotica*.**
2. ***V. anagalloides* was representative in Egypt by three subspecies *taeckholmiorum*, *anagalloides* and *heureka*. The two latter subsp. are considered new record to the flora of Egypt.**
3. ***V. catenata* was represented by *V. catenata* subsp. *pseudocatenata* and the newly recorded *V. catenata* var. *catenata*.**
4. **The occurrence of *V. scardica* subsp. *africana* in Egypt was confirmed.**
5. **This study revealed to the occurrence of *V. beccabunga*, in Egypt, which distributed mainly in the Mediterranean region.**
6. **Finally, the occurrence of *V. kaiseri* in Fayoum depression needs more investigation to elucidate the nature of the collected samples. This investigation can include comparing *V. kaiseri* from Sinai with our samples using DNA markers (ITS, AFLP, SSR).**

The summary not more than 500 words