



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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# **ESTABLISHMENT OF DNA BARCODE FOR THE IDENTIFICATION OF SOME ENDEMIC PLANT SPECIES**

By

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B.Sc.Agric. Sci. (Genetics), Fac. of Agric, Ain Shams University, 2008

M.Sc.Agric.Sci.(Genetics), Fac. of Agric, Ain Shams University, 2014

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## **Approval Sheet**

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## ABSTRACT

**Shaimaa Ahmed Ali Abdelhady: Establishment of DNA Barcode for The Identification of Some Endemic Plant Species. Unpublished PhD. Thesis, Department of Genetics, Faculty of Agriculture, Ain Shams University, 2021.**

Global warming, which is caused by anthropogenic activity, is a major threat to biodiversity in arid and semi-arid areas. Egypt is expected to undergo acute rainfall decrease and temperature boost in the next few decades, leading to geographical allocation of many plant species. Endemic plants of pleiotropic economic importance are strongly affected in the context of climate change prospects which gradually will result in losing our genetic resources plant wealth. Few studies were carried on the Egyptian Brassicaceae family which has economical and medicinal importance because of the presence of many active compounds that are included, in the pharmaceutical and cosmetic components like glucosinolates that play an important role against several pests like weeds, insects, and nematodes. In addition, it contains a large amount of antioxidant which inhibit the growth of microbes and can be used to treat rheumatic diseases. The identification of such family still kind depend and mostly rely on the morphological characters. To globally sustain the genetic pattern of this Egyptian plant family wealth, it was essential to characterize them basing on their authenticated genetic background. Here we present a phylogenetic analysis of 16 species of Egyptian Brassicaceae family using two plastid coding genes; Ribulose-1,5- bisphosphate carboxylase oxygenase (*rbcL-a*) and maturase K (*matK*). The maximum likelihood method of the two markers for our samples was concordant with the Brassicaceae's references-sequences, which exist on plastid are considered highly conserved biomarkers. In this study, we have generated a robust phylogeny tree based on molecular level that validates the Egyptian plant species and reliably differentiate them not only depending on the morphological identification. This study is considered the first phase



of Egyptian Brassicaceae family species authentication to be followed by biochemical studies serving the pharmacological and medicinal fields. DNA barcode is an effective technique in identifying species.

**Keywords:** *rbcL-a*; *matK*; DNA Barcoding and phylogenetic analysis.

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