

عنوان البحث باللغة الإنجليزية

*Geometric morphometrics of leaves of Cynanchum acutum L.*  
(Apocynaceae) from Egypt

**Abstract**

This study aimed to revise *Cynanchum acutum* in Egypt and their relative subspecies that belonging to Section *Cynanchum* (Old World) and comparing it with an American group of genera *Cynanchum laeve* subgen. (Sect.) *Mellichampia* (New World) by using classical taxonomy and Modern geometric morphometric methods (GMMs). The description of 85 specimens depending on 36 quantitative traits was measured for all leaves by ImageJ Tool software. Data of leaf description was further processed using R program. The fan neighbor-joining topology revealed to the relationship between studied taxa and population, however, a PCA biplot showed a total variation 37.7% at first axis and 8.9% at the second axis. Significant variation in taxa and populations estimated using ANOVA and MANOVA. Canonical variate analysis showed a significant difference between taxa ( $P=0.001^{***}$ ), with a total variation of 67% between three taxa. The total variation checked between two taxa by using discriminant analysis, *C. acutum* subsp. *acutum* and *C. acutum* subsp. *sibiricum* calculated 77% variation, while as the total variation between then between *C. acutum* subsp. *acutum* and *C. laeve* showed 86% of the variation and significant value ( $P=0.002^{**}$ ). The study elucidated the situation of *Cynanchum acutum* in Egypt and confirmed the presence of two subspecies viz.: subsp. *acutum* and subsp. *sibiricum*.