

Abstract

One hundred plant species of GCU Botanic Garden were analysed for their DNA Barcoding using *rbcl* gene marker by automated DNA Extraction on Beckman/ Coulter Biomek FX (U.Guelph) for the purpose of reconfirming the identification of these plant species at the molecular level and to build up their DNA library. The plant species analysed for their DNA Barcoding were already identified on the basis of their morphological characters described in Flora of Pakistan. The identification was reaffirmed on the basis of the DNA sequences, the phylogenetic relationship between the different taxonomic taxa of these plant species. In most of the cases, the phylogenetic relationship derived on the basis of classical or morphological characters agreed with the results obtained in the present study i.e. DNA Barcoding, except in few cases, where it was suggested that their DNA Barcoding may either be repeated or should be carried out using other available genes in DNA Barcoding such as *mat. K* and ITS region of all the plant samples.