Abstract

The present study includes the 10 genotypes of *Cordia dichotoma* collected from different geographical region, of Nanded district. The study divided into three different level i.e Morphological, Biochemical and Molecular study. The eleven morphological characters was studied for ten genotypes. The biochemical study was carried using three parts of each genotypes. The leaves, bark and fruits was used for Phytochemical, antimicrobial, antioxidant and HPTLC study. The molecular variation was studied using RAPD marker. Germplasms of *Cordia dichotoma* from different geographical location of Nanded district shows morphological variation. Different parts of selected germplasm gives considerable coloration/reaction for phytochemical screening. The *Cordia dichotoma* revealed measurable amount of secondary metabolites. Methanolic extract of leaves and fruit shows potential antimicrobial activity against gram+ve and gram-ve organism. *NCd2(Mudhkhed)* > *NCd4(Tamsa)* > *NCd7(Pawdewadi)* > *NCd8(Limbgaon)* gives better antimicrobial activity. The germplasm of *NCd2(Mudhkhed),NCd4(Tamsa),NCd7(Pawdewadi)* and *NCd9 (Patnoor)* gives potential antioxidant activity. All the extracts of leaves and fruit has notable antioxidant activity, compare to bark extract. HPTLC finger printing of selected extracts has shown, the number of peaks for active constituents and the separation of flavonoid from present phytoconstituents. The molecular variation by using marker technique (RAPD) shows the highest 86% similarity and phylogenetic corelation between the selected germplasm of *Cordia dichotoma*. The maximum polymorphism (81.25%) was given by primer OPBE-09. In the present study of *Cordia dichotoma*, it is concluded that variation in morphological character reveals the variation in molecular level. This study shows the existence of high genetic diversity among these accessions. Among the selected germplasms of *Cordia dichotoma* the highest 86% genetic similarity is in between *NCd2(Mudhkhed)* and *NCd6(Bhokar)*. Overall *NCd7 (Pawdewadi)* was found to be a superior germplasm line for most of the horticulturally useful traits among the accessions tested as it had higher percent of fruit set, pulp:stone ratio and fruit weight, and for biochemical activity *NCd4(Tamsa)* and *NCd2(Mudhkhed)*.