

ABSTRACT

Plants are an excellent source of herbal drugs and synthetic medicines. In fact, currently accessible medicines are obtained, either directly or indirectly from plants. The natural drugs are easily accessible, commercially viable having no side effects except having drawback of being easily admixed and adulterated with low grade material. The current study was carried out to explore and evaluate the pharmacognostic features and antioxidant potential of three species of genus Chenopodium of family Chenopodiaceae. C. album, C. murale and C. ambrosioides, are recognized their many traditional and therapeutic properties. The extraction of plant parts, stem, root and leaf of these species was accomplished in non-polar and polar solvents (n-hexane, chloroform, ethanol and distilled water) using maceration process. The crude extracts thus obtained, when examined for their physico-chemical features, were found having different appearance, texture, odour and colour. Some were dark green, brown green, reddish green, yellow or light yellow in colour. The smell was either pungent, aromatic, astringent or musky while the texture being sticky, and non-sticky, similarly the appearance granular, non-granular and smooth, etc. The maximum %age extraction yield (17.24%) was provided by C. ambrosioides chloroform leaf extracts while lowest value (2.23%) of aqueous root extracts of C. ambrosioides respectively. Idioblast containing crystals were present in stem, leaf and root parenchyma non-glandular trichome was found out in stem and leaf epidermis in targeted three species while the leaf epidermis of C. ambrosioides having glandular trichome of both capitate and non-capitate. Anisocytic stomata were present in C. album and C. murale while anomocytic stomata are present in C. ambrosioides. Powder study revealed that the vessel of C. murale root was spirale with lignified thickening while vessels of C. album and C. ambrosioides has scleriform vessels with densly arranged pits. In C. album and C. murale, the epidermis margins were slightly wavey but C. ambrosioides epidermis margins were highly wavey. All extracts of plant parts were analyzed for their phytochemistry indicated the presence of a variety of metabolites in them such as, alkaloids, carbohydrates or reducing sugars, glycosides, amino acids or protein, flavonoids, phenolic compounds, tannins, saponins, phytosterols, terpenoids, lignin, quinones, anthraquinone, anthocyanin, carboxylic acids, coumarins, gums and mucilage, fixed oil and fat. The antioxidant activity such as DPPH radical scavenging activity, total phenolic content, FRAP (ferric reducing antioxidant power) and metal chelating activity were used to explore the antioxidant ability of different extracts of stem, root and leaves of C. album, C. murale and C. ambrosioides. d. water root extracts of C. album showed the maximum DPPH radical scavenging activity, $93.94 \pm 0.43\%$ as compared to all other extracts. Total Phenolic Content of C. ambrosioides, the ethanol leaf extract showed maximum phenolic content, i.e. $85.61 \pm 0.4 \mu\text{g/ml}$ of Gallic acid than all other extracts. While the FRAP of ethanolic leaf extract of C. murale showed the maximum ferric reducing potential, $53.63 \pm 0.3 \text{ mM}$ all other extracts FRAP values. While ethanolic extract of C. album stem showed maximum percentage value, $91.03 \pm 0.03 \%$ than all other metal chelating values. These results support that plant in present study are used in traditional medicines by local people.