

## ABSTRACT

In the present study, the crude extracts of different plant parts were investigated to ascertain their yield, stability, physical condition, phytochemical and physiochemical properties, antimicrobial activities, antioxidant capacity, heavy metal detection and their applications.

In case of yield, *Beta vulgaris* showed highest yield of 44.64% , while *Brassica oleracea* var. *capitata f. rubra* and *Daucus carota* showed the lowest yield of 33.83% and 32.69%. The samples were placed at four different temperatures to determine their stability by physiochemical analysis. *Brassica oleracea* var. *capitata f. rubra* showed the less stability as compared to other indigenous plants. While *Beta vulgaris* and *Daucus carota* showed the high stability at four different temperature Low fat percentage was observed in almost all samples, ranging from 0.1% to 0.2%. The highest value of fat content was found in extracts of *Brassica oleracea* var. *capitata f. rubra* was 0.2%. The plants samples investigated for protein showed the highest protein percentage at room temperature in the extracts of *Beta vulgaris* upto 1.63%. the lowest protein content in *Brassica oleracea* var. *capitata* upto 1.27%. protein content in medium quantity was present in *Brassica oleracea* var. *capitata f. rubra* upto 1.36%. The highest carbohydrates content was extracted out from *Beta vulgaris* upto 11.07%. The medium content was present in *Brassica oleraceae* var. *capitata*, i.e. 7.89% while the lowest content was in *Brassica oleraceae* var. *capitata f. rubra* upto 4.18%. The plant samples, inspected for antibacterial and antifungal activity, showed different zones of inhibition. For the estimation of antibacterial potential three bacterial strains (*Methicillin resistance S.A*, *Staphylococcus aureus* and *Bacillus subtilis*) and one fungal strain (*Staphylococcus niger*). However, a range of 22 mm to 24 mm was noted against *Methicillin resistance S.A* in *Brassica oleracea* var. *capitata* displayed maximum (24 mm). Moreover, minimum antibacterial potential was noted in root extracts of *Beta vulgaris* (17 mm) using ethanol and maximum in *Brassica oleracea* var. *capitata f. rubra* (29 mm) using water.

The plant samples also investigated for their antioxidant potential. At 500 concentration ( $\mu\text{g/mL}$ ) of plant extract. The highest % DPPH scavenging activity was revealed by *Beta vulgaris*, i.e. 91.83 ( $\mu\text{g/mL}$ ) concentration, while the lowest by *Daucus carota* i.e. 13.56. *Daucus carota* also showed good % DPPH free radical

scavenging activity upto 40.56. The plant extracts were also analyzed for their total phenolic contents (TPC). Among all the samples, the lowest phenolic content was found in *Brassica oleraceae* var. *capitata f. rubra* i.e. 5.403 GAC  $\mu\text{g/mL}$  and highest in *Daucus carota* i.e. 17.74 GAC  $\mu\text{g/mL}$ . All other samples lies in between the range of 16.71 to 6.72 GAC  $\mu\text{g/mL}$ . Plant extracts were also investigated for their total flavonoid contents (TFC). Among all the samples, the highest flavonoids content was found in *Daucus carota* dissolved in methanol, i.e. 3.79 RE  $\mu\text{g/mL}$  and lowest in *Brassica oleraceae* var. *capitata f. rubra* dissolved in water i.e. 0.43 RE  $\mu\text{g/mL}$ . All other samples lies in between the range of 3.79 to 0.43 RE  $\mu\text{g/mL}$ . Furthermore, the analysis of percentage inhibition of ferrozine- $\text{Fe}^{2+}$  complex by metal chelating activity | The highest metal chelating activity was displayed by *Beta vulgaris*, i.e. 53.2%. While the lowest metal chelating activity revealed by *Brassica oleraceae* var. *capitata f. rubra* i.e. 15.7%. The extracted colored pigments were used for preparation of jelly, hard-candie

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