ABSTRACT

The present study employed crude dye extraction approach for the extraction of color dyes from different sources, such as *Brassica oleracea, B. compestris*, *Citrus limon, C. limetta, Tagetes erecta, Spinacea oleracea, Beta vulgaris, Rosa indica* and *Curcuma longa*. The specific color pigments like carotenoids, anthocyanin, chlorophyll and betanin were found to be the main coloring agents that impart specific color to the samples. Among all these samples, the maximum yield was obtained from *Citrus limetta* aqueous peel extract and among all the temperatures employed the room temperature was found out to be the suitable temperature for the stability of color extracts.

The physiochemical activities for fats, proteins, carbohydrates, moisture and ash were analyzed. The maximum fat contents (0.4%) were obtained from fresh extract of *Atriplex rubra*. The fresh extract of *Tagetus errecta* showed maximum protein content (0.3%), while the fresh extract of *Rosa indica* showed a maximum carbohydrate value (12%). Moreover, *B. compestris* freezer extract showed a maximum moisture content (39.1%) and *Atriplexrubra* fresh extract showed 22% as maximum ash content.

The phytochemical activities for the identification of alkaloides, flavonoides, saponins, tanins, terpenoids and total phenols were performed to identify the presence of different phytochemically active compounds. It was found that these compounds were the important constituents of all the extracted color compounds. Heavy metal analysis was performed on the extracted color dyes and no heavy metals were detected in the extracted color dyes. Due to the absence of heavy metals, these extracts can easily be used in different edible items. TLC and HPLC analysis of the extracted color compound indicated the presence of chlorophyll, carotenoids, betanin, curcumin and anthocyanin as an important color pigment of the samples. Antibacterial activity was performed against *B. subtilus, P. aureginosa, E.coli and S. aureus* bacterial strains. The maximum zone of inhibition was found out to be 46.0±0.21by methanolic extracts of *Atriplex rubra* against *E.coli.* However, the ethanolic extracts of *Spinacea oleracea* showed the minimum zone of 9.00±0.54against *E.coli* among all the aqueous, ethanolic and methanolic extracts. Antifungal activity was performed against *Aspergillus niger* and *Fusarium solani*, and maximum zone was found

as 74.0±0.57 by ethanolic extract of *Atriplex rubra* against *Aspergillus niger*. However, the minimum zone of 14.5±0.29 was observed by methanolic extract of *Brassica compestris* against *Aspergillus niger*.

The extracted colors were utilized in candies making, sugar syrup making and were also used for coloring various foods stuffs. The commercial industries should take a step ahead to promote eco-friendly and economically supportive research proposals. Moreover, the extracted color dyes were applied for dyeing purposes on cotton cloth with alum showing better and enhancing color fastness result than the lime