



## Study of Physical and Absorbance Nature in Leafy Vegetable Ayurvedic Medicinal Plants through Radiation Interaction Method

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### ABSTRACT:

From ancient times different type of materials and minerals can be extracted from the earth. Further these are used as raw materials of physical, chemical and biological materials. Here, medicinal plants are also raw materials for the preparation of new innovative useful materials to the society. Now a days different parts of medicinal plants like leaves, roots, flowers and seeds are used for preparation of medicine and other physical materials. So, presently physical nature and absorbance spectrum study was carried out on leafy vegetables ayurvedic medicinal plants which are easily available in nature. The Nine Green leafy Ayurvedic medicinal plants viz, Anethum graveolens, Colocasia, Coriander Coriandrum sativum, Curry Leaves, Fenugreek, Gongura, Mentha, Scallion plant and Spinacia oleracea which are collected from different places of Bidar, Kalaburagi and Yadgir districts of Kalyan- Karnataka region. All these medicinal plants powder and solution samples prepared accordingly the WHO guidelines, hence half kg of bulk leaves part of the medicinal plants collected and prepared the powder form of samples with mesh of nearly 300 micro meter particle size. Further, 1gm of powder sample mixed with 10ml of Conc.HCl and 90ml of Double Distilled water, finally prepared 100ml solution samples for the study of UV-absorbance and Physical nature by using UV-Visible Spectroscopy study and X-ray powder diffraction methods. The absorption and X-ray diffraction methods are most useful methods of radiation interaction that measure the absorption of radiation as a function of frequency and wavelength, due to its interaction with a sample. The present study observed that all 9 studied leafy vegetable Ayurvedic medicinal plants shows the peak interaction of UV –Visible at 295nm wavelength, it shows the present samples maintain equilibrium state of solution and good absorbance of UV-radiation from the nature. Similarly, the XRD pattern of present analyzed medicinal plants indicates that the all prepared medicinal plants samples are amorphous in nature at different intensity. According to the literature review, the medicine value of medicinal plants enrich when the medicinal plants physical nature is amorphous. The present study is helpful for the preparation of new innovative medicines and physical materials to the new researchers.

### 1. Introduction

In advanced scientific research, the fluorescence absorption and emission spectroscopy methods are widely used for new innovations, trace elemental analysis in environment samples, etc. The medicinal plants are one of the natural resources of environment. The Contribution of medicinal plants in the traditional system of medicine for curing diseases has been documented. Further, while consuming the medicinal plant drug, elements content in medicinal plants has to be studied in the light of WHO/FAO permissible limits. Similarly the study of Physical nature and absorbent properties of medicinal plants is very essential because

these entities may play an important role in medicinal plants drugs. Herbal medicine is one of the oldest medicine systems. It originated in India more than 5000 years ago and remains one of the country's traditional health care systems. Its concepts about health and disease promote the use of herbal compounds, special diets, and other unique health practices. Indian government and other institutes throughout the world support clinical and laboratory research on Medicinal Plants. These Plants are used in different system of medicine such as in Allopathic, Unani, Homeopathic and even in other systems but the theoretical foundation and in sight and in depth understanding of the practice



of medicine that we find in Herb, Ayurveda is much superior among organized ancient system of medicine. Present study area considered is, Kalyan-Karnataka region, situated in the north-east part of the Karnataka state and falls within the geographical region of north maiden. In this study the 4 same families (Jedi butte) Ayurvedic medicinal plants are used as mane maddu, Ayurvedic medicine for different diseases like kaamale, dog bite etc.

## 2. Materials And Methods

With the guidelines of the regular practitioners of medicinal plants, in this present study selected 9 leafy Ayurvedic vegetables medicinal plants and collected from different places of Bidar, Kalaburagi and Yadgir Districts. Here total 54 Leafy Vegetable Ayurvedic medicinal plants parts collected, nearly 1/2kg and washed with distilled water to clean dust and mud. Further cleaned samples were dried in the airtight lab at room temperature for 20 days. The dried leaves part were mechanically powdered using a mixer grinder and finally sheaved with a mesh of size 355  $\mu\text{m}$  to get a fine powder and then stored in an airtight polythene plastic, according to the standard procedure of WHO and other AYUSH system of medicinal plants.

### For UV-Visible

The sample solution was prepared by adopting standard instrumental sample preparation procedure i.e 1gm of powder samples of Medicinal plants + 10ml of AR grade conc.- $\text{H}_2\text{SO}_4$  + 90ml of Double Distilled water (1:10:90=100 ml) and finally 100 ml solution was subjected to the analysis of major, minor and trace elemental content. From 100ml solutions we should take 5ml for the UV-Visible Spectroscopy study.

**For XRD:** The < 0.01gm of Powder sample required for XRD study

## 3. Results And Discussion

The below figure.1 shows that the XRD pattern of present analyzed medicinal plants it is clearly indicates that the all prepared medicinal plants samples are amorphous in nature. According to the literature review the medicine value in medicinal plants enrich in amorphous nature of samples. Also figure 2 shows that the UV-Visible Spectra of these medicinal plants has an

absorption peak at 295nm wavelength and it shows the homogeneous nature of solution.

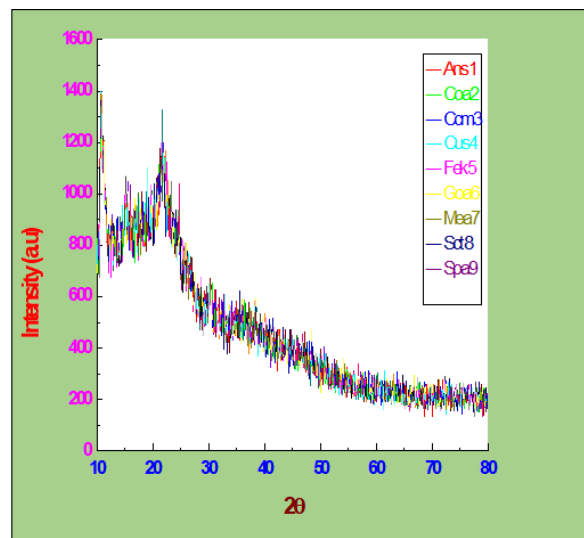


Figure1. XRD pattern

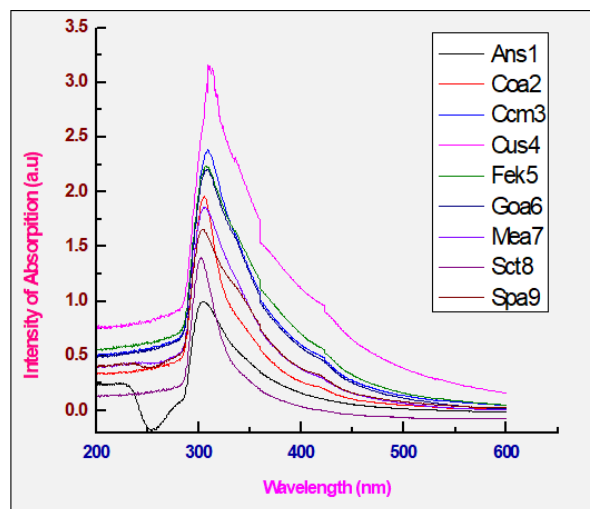


Figure 2. UV-Visible Absorbance

From the UV-Visible spectra, it is observed that the threshold wavelength of medicinal plant materials range is 290 nm to 300 nm wavelength and absorbed peak is at 295 nm. Similarly, XRD pattern confirms the amorphous nature of plants at the  $2\theta$  range 10 to 80 degree, which shows that the studied medicinal plants maintain equilibrium state solution and high phytochemical. Further it is useful for the study of i.e., flavonoids and alkaloids property and energy band gap.



## 4. Conclusion

The optical property study carried by UV-Visible spectra, with the solution sample of medicinal plant leaves obtained the peak at 290 nm to 300 nm wavelength and absorbed peak is 295 nm, which shows that the studied medicinal plants maintain equilibrium state solution and high phytochemical i.e., flavonoids and alkaloids property. Similarly, XRD pattern confirms the amorphous nature of plants at the  $2\theta$  range 10 to 80 degree.

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