

Assessment of Phytoconstituent of Five Faced *Elaeocarpus Ganitrus* Beads by FTIR and UV-VIS Spectroscopic Analysis

Subhashish Tripathy*¹, Anil Middha² & Sudhansu Ranjan Swain³

¹Dept. Pharmaceutical Science OPJS University¹⁻², Churu, Rajasthan- India

²Moradabad Educational Trust Group of Institutions Faculty of Pharmacy³, Moradabad, India

Abstract: Spectroscopy is the branch of science deals with the investigation and measurement of spectra produced when matter interact with or emit electromagnetic radiation. Spectroscopic analysis pretty often uses to analyze qualitative and quantitative analysis of plant product. In the present spectroscopic analytical study we deal with the nature of the visible absorption and fluorescence spectra of methanolic seed extract of *Elaeocarpus Ganitrus* plant.

Elaeocarpus Ganitrus commonly known as Rudraksha is famous for its medicinal property. This amazing bead controls our body bio-electrical energy due to its electromagnetic property. Present study focuses on identification of phytoconstituent in *Elaeocarpus Ganitrus* beads by the help of FTIR and UV-VIS spectroscopy study. The experiment showed that the presence of phenolic compound and Flavanoids. UV-VIS profile showed that the peak at 318.00nm and 245.00nm for Flavanoids and FTIR spectra showed the peak at 3363.97cm⁻¹ for OH group.

INTRODUCTION

Phytochemical characterization of plant material is important as it relates to the nature and extent of therapeutic action possible with its use. Among the thousands of naturally occurring medicinal constituents so far identified in plants and exhibiting a long history of safe use. Plants are universally recognized as a vital component of the world's biological diversity and an essential resource for the

planet. The art of healing has its origin in the antiquity of human civilization¹⁻². The medicinal value of the plant lies in some of its chemical substances that produce a definite physiological action on human body. The most precious bioactive constituents of plants are alkaloids, tannins, Flavanoids and phenolic compounds. In Hindu mythology; *Elaeocarpus Ganitrus* seed (Rudraksha) beads bear a great spiritual, religious and materialistic significance. Due to its natural electromagnetic property it also heals many diseases chronically due to its electromagnetic property³⁻⁴. As per Ayurvedic system of medicine, wearing Rudraksha beads relieves strain, insomnia, anxiety, lack of concentration, depression, palpitation, hypertension, rheumatism, infertility and asthma and It has also anti-aging effect. Sometime it is believed that Rudraksha has natural piezoelectric effect that means that it has the ability to generate electric charge in response to applied mechanical stress⁵. All the activities in our sense organs are governed by flow of this bio-electric current and Rudraksha beads control our bio electrical energy. Rudraksha seeds have been used for thousands of years as an astonishing aid to gain power and for living healthy life. Due to electromagnetic and inductive properties of Rudraksha beads, they send out equivalent signals, differing for different mukhi to brain, activates firm brain chemicals and neurotransmitters so imposes optimistic impact on blood circulation, nervous system and various other organ systems⁶⁻⁷.



Fig: Elaeocarpus ganitrus plant and seed Rudraksha

MATERIALS AND METHODS

Collection and preparation of plant material:

Genuine Five faced Elaeocarpus Ganitrus bead commonly known as Rudraksha were collected from online seller CHINTAN JOSHI 92/3, Bank Colony, Brahmeshwar Patna, Bhubaneswar (Orissa) Pin-751018 through EBay India in 2016 and further authenticated by X-Ray, water dipping technique. Elaeocarpus Ganitrus beads samples were washed thoroughly in running tap water to remove dirt particles and remove debris followed by sterile distilled water. Then dehydrated up beneath the shed and dry for three week and then crush and powder it. Dried and powdered samples were extracted by Soxhlet apparatus with methanol for 4 days. The extracts were concerted using water bath set at 60°C. The extracts were lastly filtered and subsequently concentrated in rotary evaporator under reduced pressure after that, the individual extracts were weighed and percentage extractive values were evaluated⁸.

Spectroscopic analysis:

To identify the U V -VIS spectrum profile of the Extracts of Elaeocarpus Ganitrus bead of plant, the extract were scanned in the wavelength range from 200-800nm by using UV spectrophotometer and the characteristic peaks were detected. FTIR

analysis was performed using Perkin Elmer spectrophotometer system which was used to detect the characteristic peaks and their functional groups. The peaks values of the UV-VIS and FTIR were recorded⁹.

RESULT

Functional groups identification:

The FTIR spectroscopy analysis was used to recognize the functional groups of the therapeutic active components present in Elaeocarpus Ganitrus plant bead based on the peaks value in the section of IR radiation. When the plant extract was processed into the FTIR, the functional groups of the components were alienated based on its peaks ratio¹⁰⁻¹². The results of FTIR analysis show the presence of Alcohol, Phenol, Alkanes, aldehyde, aromatic compound, derivative alcohol, aromatic amines and halogen compound (fig-1, and table-1).

Quantitative spectroscopic analysis:

The UV-VIS outline of plant extract was taken at the 200 to 800nm wavelength owing to the sharpness of the peaks and proper baseline. The profile showed the peaks at 318.00nm and 239.00nm with the absorption 3.382 and 0.294 respectively (fig-2, and table-2)

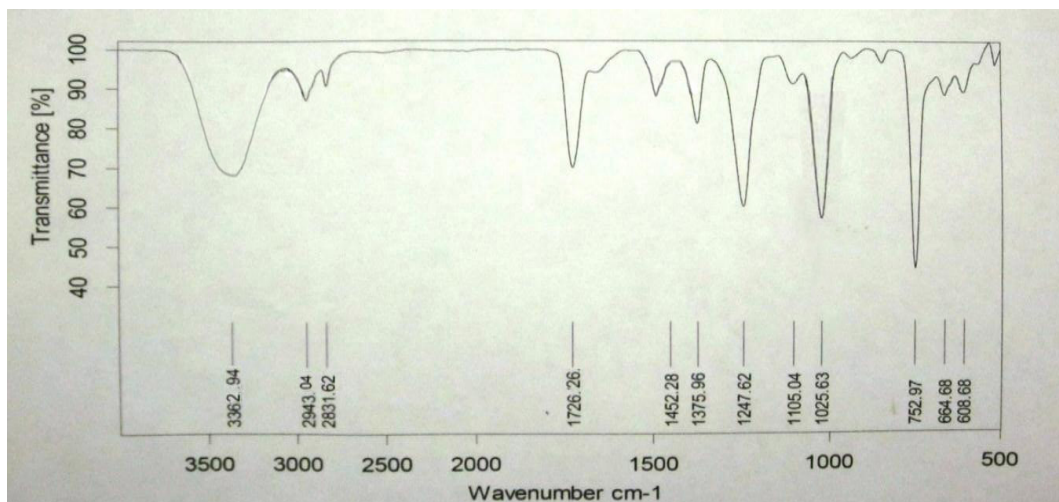
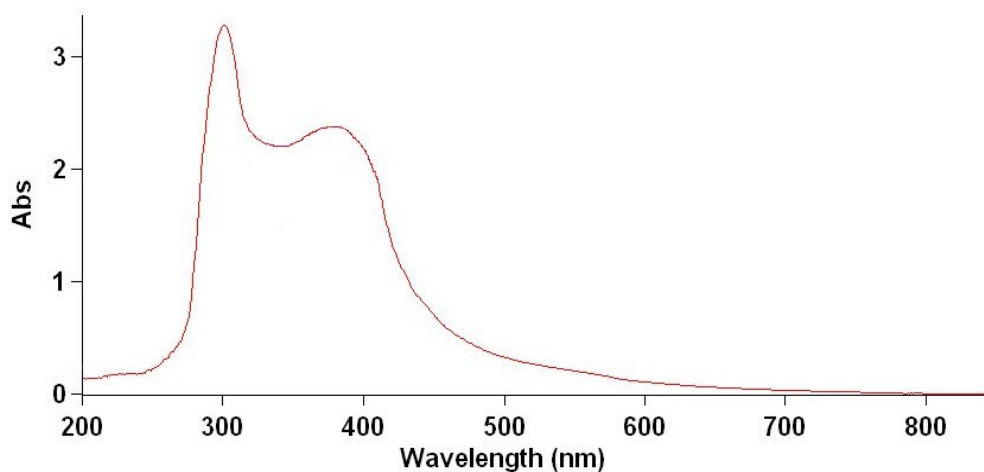


Table 1. FTIR Peak Values of Extracts of Elaeocarpus Ganitrus plant

S.NO.	Peaks values	Functional groups
1.	3362.94	Phenol
2.	2943.04	Alkanes
3.	2831.62	Alkanes
4.	1726.26	Aldehyde
5.	1452.28	Alkanes
6.	1375.96	Alkanes
7.	1247.62	Aromatic amines
8.	1105.04	Secondary alcohol
9.	1025.63	Carboxylic acid
10.	752.97	Aromatics
11.	664.68	Halogen compound
12.	608.68	Halogen derive compound

Table 2. UV-VIS Peak Values of Extracts of Elaeocarpus ganitrus seed extract of plant



S.NO.	Wavelength(nm)	Absorption
1.	318.00	3.382
2.	239.00	0.294

DISCUSSION AND CONCLUSION:

Spectroscopy is the study of Adsorption and emission of light and other radiation by matter as related to the dependence of these processes on the wavelength of the radiation and virtually applied all technical fields of science and technology which is very sensitive single atoms and different isotope can be detected. Spectroscopic technique has become a powerful and analytical tool for the qualitative and quantitative analysis of pharmaceutical and biological materials. Rudraksha contains indolizidine type of Alkaloids and the alkaloids are Elaeocarpidine, Elaeocarpine, Isoelaeocarpin, Epiialloelaeocarpiline, Alloelaeocarpiline, Pseudoepiisoelaeocarpiline, Rudrakine along with glycosides, phenolic compounds, Flavanoids, saponins, carbohydrates and fixed oils. present investigation spectroscopic analysis of being carried out on the Flavanoid present in this plant consequently the IR spectra of this plant extract shows the presence of OH group and UV-VIS spectrum of this plant extracts has absorption bands at 318 and 239 nm. These absorption bands are feature for Flavanoids and its derivatives. Analysis of Elaeocarpus ganitrus bead sample under FTIR and UV-VIS spectroscopic technique showed that the presence of phenolic compound and Flavanoid and along with other functional group

REFERENCES:

1. Joyce Diamanti (2001). More about *Rudraksha*, the Bead Society of Greater Washington Newsletter. 18 (2). P.6–8.
2. Yelne, MB. (1995). Notes on the Botanical Identity of Beads Found Under the Name: Rudraksha, Biorhythm, AYU. Academy series. 44. P 39–44
3. Rao JIP, Swamy KS. (1995). Rudraksha therapy for perfect health. Ancient Science of Life.1.P.21-26.
4. Swarnalatha N. (2000). Rudraksam, Journal of Sukrtindra Oriental Research Institute. Vol. 03. P.17–22
5. Swami G., Nagpal N., Rahar S., Singh P., Singla S., Porwal A. and Kapoor R. (2010). *Elaeocarpus sphaericus*: Medical and scientific facts. Scholars research library.297-306
6. David W. Lee (1991). Ultrastructural basis and function of iridescent blue color of fruits in *Elaeocarpus*, Nature, Vol. 349, No.6306, p. 260–262.
7. www.divine-rudraksha.com/rudraksha-information.html
8. Tripathy S, Mida A, Swain S. R. (2016). Phytochemical Screening And Thin Layer Chromatographic Studies Of *Elaeocarpus Ganitrus* Seed The Magical Electromagnetic Bead (Rudraksha).

International Journal of Pharmacy and Biological Sciences.6 (3).P16-24

Neha Sahu, Jyoti Saxena. (2013). Phytochemical Analysis of *Bougainvillea Glabra Choisy* by FTIR and UV-VIS Spectroscopic Analysis Int. J Pharm Sci Rev Res. 21(1).P.196-198.

Harbourne JB, (1984). Phytochemical Methods. A Guide to Modern Techniques of Plant Analysis Chapman and Hall London,.

Chandrasekar R, Rao SN. (2013). Phytochemical Analysis of ethanolic extract of Leaves of *Leucas indica* (EELLI). Int. J Pharm bio sci.4 (1).P.33-38.

Grube M, Muter O, Strikauska S, Gavare M, Limane B. (2008). Application of FT-IR spectroscopy for control of the medium composition during the biodegradation of nitro aromatic compounds. *Journal of Indian Microbiology and Biotechnology*. 35. P.1545–1549.