

**A CRITICAL REVIEW ARTICLE ON *RUDRAKSHA (Elaeocarpus species)* WITH ITS PHARMACOLOGICAL EFFECTS****Neha Rai<sup>1\*</sup>, Suresh Chaubey<sup>1</sup>, Shailendra Pradhan<sup>2</sup>, Richa Sharma<sup>2</sup> and D. C. Singh<sup>3</sup>**<sup>1</sup>PG Scholar, Dravyaguna Department, Rishikul Campus, Haridwar.<sup>1</sup>Professor, Dravyaguna Department, Rishikul Campus, Haridwar.<sup>2</sup>Assistant Professor, Dravyaguna Department, Rishikul Campus, Haridwar.<sup>2</sup>Assistant Professor, Agad Tantra Department, Main Campus, Harrawala.<sup>3</sup>Professor, Dravyaguna Department, Rishikul Campus, Haridwar.

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**ABSTRACT**

*Rudraksha* is considered as one of the sacred aspects of Indian lifestyle due to its religious, ethno botanical and medicinal values. It is used as prayer beads in many religions especially Hinduism, Buddhism and Jainism. *Rudraksha* bead is one of the most sacred insignia of Hinduism and Indian subculture. The beads are the dried seeds of *Rudraksha* tree (*Elaeocarpus spp.*) and are considered as highly priced seeds around the world. People around the world are using *Rudraksha* as a herbal drug traditionally. Present review article throws light on different types of *Rudraksha* according to *mukhis* (faces), its pharmacological activities and ethnomedicinal uses.

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Campus, Haridwar.**KEYWORDS:** *Rudraksha*, Pharmacological, *Elaeocarpus*.**INTRODUCTION**

*Rudraksha* is a Sanskrit compound word consisting of *Rudra* and *Aksha*. *Rudra* is one of Lord Shiva's vedic names and *Aksha* means tear drops. Thus, the name means Lord Rudra's teardrops. As per Hindu Mythology, *Rudraksha* has religious, spiritual, and materialistic significance.

About 360 species of *Elaeocarpus* found in different parts of world i.e., Australia, East Asia, Malaysia, and Pacific Islands. About 120 species belongs to genus *Elaeocarpus*, out of which 25 species found in India.

### Distribution

*Rudraksha* mainly occurs in tropical and subtropical areas at the altitude ranging from the sea coast to 2000 metres more than the sea level. In India, it is found in Uttarakhand, Assam, Bihar, Sikkim, Bengal, Maharashtra and Madhya Pradesh.<sup>[1]</sup> *Rudraksha* commonly found at the foothills of Arunachal Pradesh. It originates in humid evergreen forests, which are characterized by 3-tier forest structure.

Some of the important species of *Elaeocarpus* found in India are.

- *Elaeocarpus ganitrus* Roxb.ex G.Don (syn. *Elaeocarpus sphaericus*)
- *Elaeocarpus tuberculatus* Roxb.
- *Elaeocarpus serratus* var. *weibeli*
- *Elaeocarpus floribundas* Blume.
- *Elaeocarpus munroi* (Wight) Mast.

### Morphology<sup>[2]</sup>

- Evergreen tree.
- Leaves- 10-15 by 2.4-4.5 cm., oblong-lanceolate, acute or acuminate (rarely obtuse), obscurely and irregularly crenate serrate or subentire, decurrent into the petiole, glabrous.
- Petiole- 6-10 mm. long.
- Flower- white or yellow colored.
- Racemes- 5-7.5 cm. long from old wood.
- Buds- ovoid-conical, pointed.
- Sepals- 6 mm. long, oblong, acuminate, pubescent outside.
- Pedicles- 6mm. long.
- Petals- 8mm. long, oblong, laciniate about half way down, ciliolate.
- Stamens- about 40, in groups opposite each petal; anthers linear, one valve tipped at the apex with a small tuft of glistening hairs.
- Ovary- pilose, 5-celled; style longer than the stamens.
- Drupes- 1.3-2 cm. diam., globose or somewhat obovoid, purple; stone tubercled, 5-celled, 5-seeded.

**Vernacular names<sup>[3]</sup>**

<b>Sanskrit</b>	<i>Amara, Bhutnashana, Harksha, Nilakanthaksha, Pavana, Pushpachanamara, Rudraksha, Sharvaksha, shivaksha, shivapriya</i>
<b>Hindi</b>	<i>Rudrak</i>
<b>Bengal</b>	<i>Rudrakya</i>
<b>Kannada</b>	<i>Rudraksha</i>
<b>Malayalam</b>	<i>Rudraksham</i>
<b>Marathi</b>	<i>Rudraksh</i>
<b>Tamil</b>	<i>Akkam, Irrattaiyuruttirasham, Kaurichangamani, Uruttiradcham, Uruttirakkam</i>
<b>Telegu</b>	<i>Rudrachallu</i>
<b>Uriya</b>	<i>Rudrakhyo</i>

**Properties and action as per API<sup>[4]</sup>**

*Rasa - Madhura*

*Guna - Snigdha, Sthula*

*Virya - Usna*

*Vipaka – Not mentioned*

*Karma – Medhya, Raksoghna, Arogyaprada, Hridayam*

**Taxonomic Profile<sup>[5]</sup>**

Kingdom	Plantae
Division	Magnoliophyte
Class	Magnoliopsida
Order	Oxalidales
Family	Elaeocarpaceae
Genus	<i>Elaeocarpus</i>
Species	<i>Ganitrus</i>
Botanical Name	<i>Elaeocarpus ganitrus</i>
Common Name	<i>Rudraksha</i>

**Types of Rudraksha according to Faces (Mukhis)<sup>[6]</sup>**

Faces	Benefits
<i>One face Rudraksha</i>	<i>Ek mukhi Rudraksha</i> symbolizes Lord Shiva. Shape of <i>Ek mukhi Rudraksha</i> is like shape of cashew nut or half-moon. Nowadays people are selling round shaped beads in the name of 1 <i>mukhi Rudraksha</i> from Nepal, they are underdeveloped beads with naturally formed one face but with 4-5 internal seeds. Other than this one oval shaped or lentil shaped <i>Rudraksha</i> is available in Nepal quality. This is the supreme <i>Rudraksha</i> for people who want to enjoy all the blessings as well as get devoted to the supreme power. One <i>mukhi Rudraksha</i> provides health, wealth and Happiness in true sense as it also enhances the spiritual Growth of the wearer. Ruling Planet- Sun

<i>Two face Rudraksha</i>	It symbolizes the combined form of Lord <i>Shiva</i> and Goddess <i>Parvati</i> . It is also called as UNITY <i>Rudraksha</i> . It harmonizes the relations between two individuals by making happier and lasting relations. It can even free a person from the sin a <i>Gau hatya</i> (cow slaughter). Ruling Planet- Moon
<i>Three face Rudraksha</i>	This type of <i>Rudraksha</i> has three natural lines called <i>Mukhas</i> (face) on the surface. Wearing this type of <i>Rudraksha</i> destroys all the sins of the person done by them in their past life. Ruling Planet- Mars
<i>Four face Rudraksha</i>	This type of <i>Rudraksha</i> has four natural lines on its surface. Wearing this <i>Rudraksha</i> increases the mental power of a person. Ruling Planet- Mercury
<i>Five face Rudraksha</i>	Five faced <i>Rudraksha</i> is the most commonly found <i>Rudraksha</i> . It destroys the “Bad <i>Karma</i> ” of the present life, thereby making people pure and his mind become peaceful and calm. This type of <i>Rudraksha</i> is has been highly regarded in ancient texts and it has been given the status of “ <i>Dev Guru Rudraksha</i> ” because of the fact that its ruling planet is JUPITER who is the Guru of Gods. It also gives name, fame and Mental peace to the wearer. Ruling Planet- Jupiter
<i>Six face Rudraksha</i>	Six face <i>Rudraksha</i> has six lines on the surface. Person who wears this type of <i>Rudraksha</i> gets courage as well as wisdom by the blessings of <i>Lord Kartikeya</i> as the ruling deity of this <i>Rudraksha</i> is <i>Lord Kartikeya</i> (second son of <i>Lord Shiva</i> ). It is said that wearer of this <i>Rudraksha</i> is blessed by Goddess <i>Parvati</i> , Goddess <i>Maha Laxmi</i> and Goddess <i>Saraswati</i> . It also increases the will power and the power of expression of the person. Ruling Planet- Venus
<i>Seven Face Rudraksha</i>	Seven <i>mukhi Rudraksha</i> has seven Lines on its surface. This type of <i>Rudraksha</i> enhances the wealth and prosperity to the person who wears it as the ruling deity of this <i>Rudraksha</i> is Goddess <i>Maha Laxmi</i> . This <i>Rudraksha</i> is also related to the 7 sages ( <i>Saptrishi</i> ) and the wearer is bestowed with good health and wealth by their blessings. Ruling Planet- Saturn
<i>Eight face Rudraksha</i>	It consists of eight naturally occurring lines on its surface. It removes all obstacles so that the wearer of this type of <i>Rudraksha</i> is able to achieve success very easily thereby by providing a happier life. Ruling planet- <i>Rahu</i>
<i>Nine face Rudraksha</i>	The ruling deity of nine <i>mukhi Rudraksha</i> is Goddess <i>Maha Durga</i> and it is believed that all the nine incarnations of <i>Maa Durga</i> ( <i>Shailputri</i> , <i>Brahmacharni</i> , <i>Chandraghanta</i> , <i>Kushamanda</i> , <i>Katyayani</i> , <i>kaalratri</i> , <i>Maha Gauri</i> , <i>Siddhi Dhatri</i> ) resides in this type of <i>Rudraksha</i> and the person who wears this type of <i>Rudraksha</i> gets blessings by all of them. This type of <i>Rudraksha</i> is said to make a person fearless and he is blessed with energy, power, dynamism and wear less which leads to a better self-confidence thereby helping him to achieve success, Name and Fame. Ruling Planet- <i>Ketu</i>
<i>Ten face Rudraksha</i>	It represents lord <i>Vishnu</i> who is the preserver of entire universe, it

	helps the person to overcome difficult times and protected by the blessings of Lord <i>Vishnu</i> . All the sins done by the ten organs of the Human are destroyed by wearing 10 <i>Mukhi Rudraksha</i> . Ruling Planet- None
<i>Eleven face Rudraksha</i>	Eleven <i>Mukhi Rudraksha</i> is represented by the eleventh <i>Rudra</i> called Lord <i>Hanuman</i> who is called the Lord of Courage, Bravery and Adventure. Person after wearing this type of <i>Rudraksha</i> gets a feeling of right action and courage. Ruling Planet- None
<i>Twelve face Rudraksha</i>	This type of <i>Rudraksha</i> is ruled by Lord Sun ( <i>Surya</i> ) who create powerful Aura around the person who wears this type <i>Rudraksha</i> . It improves the administrative capacity of the person. This <i>Rudraksha</i> is said to possess the brilliance, lustre, Radiance and Strength of Lord Sun. Also, wearer gets protection from diseases, worries, fear of armed people and wild animals. Ruling planet- Sun
<i>Thirteen face Rudraksha</i>	It represents the lord <i>Kamadeva</i> and Lord <i>Indra</i> (King of Gods). This type of <i>Rudraksha</i> is very rare to be found. It gives immense wealth and the position of authority to the person who wears it. Ruling planet- Venus
<i>Fourteen face Rudraksha</i>	This type of <i>Rudraksha</i> is also called as Divine Gem ( <i>Dev Mani</i> ). It is believed that it is originated directly from the eyes of Lord <i>Shiva</i> who himself wears this bead. It activates the <i>Agya Chakra</i> which is present in between the eyebrows thereby giving the wearer an ability to visualize the future so that that he can make correct decisions of his life. It is also believed that the wearer of this fourteen <i>mukhi Rudraksha</i> becomes favourite of lord <i>Shiva</i> . Ruling planet- Saturn
<i>Fifteen face Rudraksha</i>	This type of <i>Rudraksha</i> is the image structure of <i>Pashupati</i> exploring the peace and persistence in the hearts of mortal in highly auspicious structure which is found very rarely on the land. Ruling Planet- <i>Rahu</i>
<i>Sixteen face Rudraksha</i>	This <i>Rudraksha</i> represents the Lord <i>Mahakaal</i> ford of Lord <i>Shiva</i> . Person who wears this sixteen <i>mukhi Rudraksha</i> gets free from fear of <i>Kaal</i> (Death). This <i>Rudraksha</i> is also known as <i>Jai Rudraksha</i> and is blessed by lord <i>Shiva</i> and dedicated to Lord <i>Rama</i> and it is full of great human virtues. People who are suffering from disease like leprosy, T.B. And lung diseases should wear this type of <i>Rudraksha</i> . Ruling Planet- <i>Ketu</i>
<i>Seventeen face Rudraksha</i>	It represents <i>Devi Katyayani</i> (sixth form of Maa <i>Durga</i> ) and Lord <i>Vishwakarma</i> . It gives wealth to the wearer suddenly. Also, it removes all the sins of a person done in their past life. In <i>Mythology</i> “it is said that Lord <i>Vishwakarma</i> has built the whole world and seventeen <i>Mukhi Rudraksha</i> adores all the hora of lord <i>Vishwakarma</i> . It makes <i>Dharma</i> , <i>Artha</i> , <i>Kaam</i> and <i>Moksha</i> effective in a person. Ruling Planet- None
<i>Eighteen face Rudraksha</i>	This <i>Rudraksa</i> is a symbol of Goddess Earth/ <i>Bhumi</i> . It increases the tolerance power of the wearer Ruling Planet- Earth
<i>Nineteen face Rudraksha</i>	It is the symbol of Lod <i>Shiva</i> and Goddess <i>Parvati</i> and represents

	<p>Lord <i>Narayana</i>. After wearing this type of <i>Rudraksha</i> person enjoys all the worldly pleasure and does not face any type of distraction in his life. It also prevents person from many diseases like Diabetes, sexual disorders, blood Pressure etc. it is very beneficial for people who are suffering from spinal and blood problems.</p> <p>Ruling Planet- Mercury</p>
<i>Twenty face Rudraksha</i>	<p>This type of <i>Rudraksha</i> is extremely rare to find. It has twenty lines originating from top to bottom. This <i>Rudraksha</i> is blessed by Lord <i>Brahma</i> (creator of the entire world). This <i>Rudraksha</i> is <i>Swaroop</i> of lord <i>Bhrama</i>. It consists of energies of all 9 planets and <i>Tridevas</i> (<i>Bhrama</i>, <i>Vishnu</i> and <i>Mahesh</i>). This <i>Rudraksha</i> is highly rare to find and due to its energies, the wearer gets power to achieve almost anything he desires.</p> <p>Ruling Planet- All 9 Planets</p>
<i>Twenty One face Rudraksha</i>	<p>It represents Lord <i>Kuber</i> (God of wealth). This is also very rare bead and wearer of this type of <i>Rudraksha</i> is blessed with great wealth and health. It also helps in the spiritual growth of the wearer and opens third eye <i>chakra</i> and provides sixth sense.</p> <p>Ruling Planet- None.</p> <p>Ruling God- Lord <i>Kuber</i></p>

### Substitution and Adulteration<sup>[7]</sup>

- Splurging market demands and high market rates for multi-faced *Rudraksha* has created a niche for fake beads in the market. A large no. of fake beads are available in market and are sold at good price to ignorant customers. Usually, fake beads are made from wood, cork, gum or from clays. The most commonly found fake beads are made from the heartwood of *Aquillaria agallocha* tree and Chestnut or Walnut tree. Two to five faced *Rudraksh* are quite common and are easily available. One faced spherical *Rudraksh* is the rarest. *Elaeocarpus augustifolius* produces round one faced beads but are extremely rare in occurrence.
- Another species of *Elaeocarpus* (*Elaeocarpus tuberculatus*) having a cashew nut shaped bead is thus sold as one *mukhi Rudraksha*. The cashewnut shaped bead is easily available and is not expensive, but is sometimes sold to ignorant buyers at high prices. Spherical one faced *Rudraksha* is however the most abundantly sold fake bead, which is made by carving berries, betel nut and Areca nut. Stalks are also implanted on them to give them genuine looks. Sometimes faces of higher *mukhi Rudraksha* beads are filled with wood dust or particles of wood to make them one *mukhi*. Beads with carved snakes, serpent heads, Tridents and *Shivlings* are also available in market, which are fake.
- Another type of *ek mukhi Rudraksha* often sold in market is '*Haridwar Ek Mukhi*' which are usually of *Elaeocarpus serratus*. *E. serratus* bears three faced oval beads and are quite

common in western Himalayan foothills. 99.9% beads produced from a tree are three faced. Rarely these trees produce a single one *mukhi* oval bead. However, large no. of one *mukhi* oval beads available in market are tampered three faced beads, which are finely moulded by sealing of two clefts using resin or wood dust or by carefully pasting small pieces of beads on the clefts. Faces on a *Rudraksha* bead is also increased by carving extra lines on lower *mukhi Rudraksha*, thus making more faces in them and obtaining higher prices. Cheaper *Rudraksha* beads are also carefully broken down and then joined again to make beads with more faces and rare conjoint beads like *Gauri Shankar/trijuti*.

### **Ethnomedicinal use of *Rudraksha*<sup>[8]</sup>**

*Rudraksha* medicines are most effective as preventive and curative but one must use them at least for 40 days. As any other Ayurvedic herbs this also works from the root levels of the diseases to eradicate the diseases.

- Continuous wearing of *Rudraksha* relieves the depression, mental tension, controls hypertension, build up the self-confidence and cures skin diseases.
- Wearing *Rudraksha* mala along with *Tulsi mala* found to be very much effective in T.B. and Lung diseases.
- *Rudraksha* decoction's gargling is found to be very effective in cracks on tongue, tastelessness and heaviness.
- For mental weakness and improving memory power *shanmukhi Rudraksha* should be kept in a cup of boiled milk during night and drink before going to bed for 40 days.
- *Rudraksha* can be used in cosmetics to bring skin glow
- For conceiving baby- only one piece of *Rudraksha* and one *karsa* (10 gms) of *Sarpakshi* should be cooked together and pounded in the milk of one coloured cow. This, taken during the menstrual period would make even a sterile woman conceive.
- Burn or pox marks on face can be treated by using the five-faced *Rudraksha*.

### **Pharmacological Activities**

#### **Antiasthmatic activity<sup>[9]</sup>**

- Chloroform, acetone, petroleum ether, benzene and ethanolic extracts of *Elaeocarpus sphaericus* fruits were found to have mast-cell stabilizing activity, substantiating the effectiveness of *Elaeocarpus sphaericus* in bronchial asthma. In other study the petroleum ether, benzene, chloroform, acetone and ethanol extracts protected guinea pigs against bronchospasm induced by acetylcholine aerosols and histamine.

**Antidepressant activity<sup>[10]</sup>**

- Ethanol and Petroleum extracts of *Elaeocarpus sphaericus*'s fruit decreased the swim stress immobility in mice signifying some scale of antidepressant activity.
- Pharmacological investigations with the 90% ethanolic extract of the fruits of *E.ganitrus* showed the occurrence of a major central nervous system depressant effect, characterized by typical behavioral actions, morphine analgesia, anticonvulsant, potentiating of hexobarbitone hypnosis and anti-amphetamine effects. In this study the extract showed a cardio stimulant, depressor, part of these being mediated through beta adreno receptor stimulation and in part through a direct Musculo tropic effect.

**Antianxiety activity**

- *Elaeocarpus ganitrus* was evaluated for antianxiety activity in mice using elevated plus maze model. The chloroform and ethanol extractives were shown effective against anxiety at all doses, but a dose of 200mg/kg of ethanol extractive was at equality with that of diazepam as clear from statistical equivalence between the results of this dose and that manifested by diazepam. Chloroform extractives also effective at all doses but most effective at a dose of 400 mg/kg.<sup>[11]</sup> Fruit extract (methanolic) of *Elaeocarpus sphaericus* showed anxiolytic effect in swiss albino mice.<sup>[12]</sup>

**Antidiabetic activity**

- *Elaeocarpus ganitrus* also shows the Antidiabetic potential effect by chitosan based aqueous extract of *Elaeocarpus ganitrus* by producing hypoglycemic effect in normal rats. At 100 mg/kg body weight doses of given orally formed clinically significant hypoglycemia. The % reduction of blood glucose of the chitosan based aqueous extract at a 200 mg/kg dose is comparable with the standard antidiabetic drug glimeperide 20 mg/kg dose body weight.<sup>[13]</sup> In another study Bualee and Rahman showed that water extract of leaves, fruit and twigs of *Elaeocarpus grandiflora* has been usually used to treat diabetic patients. *Elaeocarpus grandiflora* water extract possesses a hypoglycemic effect.<sup>[14,15]</sup> In the study of aqueous extract of *Elaeocarpus ganitrus* showed potential antidiabetic effects.<sup>[16]</sup>

**Anti-inflammatory activity**

- The benzene, chloroform, acetone, petroleum ether and ethanol, fruits extracts of *Elaeocarpus sphaericus* at a dose level of 200 mg/kg body weight was studied in rat paw



edema using different inflammogens. The ethanolic and petroleum ether fruit extracts are effective against carrageenan, bradykinin and PGE.

- The chloroform fruit extract of *Elaeocarpus sphaericus* showed effect against histamine. Chloroform extract was essentially effective in 5-HT induced inflammation<sup>[17]</sup> and ethanolic extract also inhibit histamine. In other study, petroleum ether, benzene, acetone, chloroform and ethanol fruit extracts showed significant anti-inflammatory action against both acute and subacute models.<sup>[18]</sup>

#### **Antimicrobial activity**

- The petroleum ether, benzene, chloroform, acetone and ethanol extracts of dried fruit of *Elaeocarpus sphaericus* was investigated against 28 gram-positive and gram-negative bacteria using the plate dilution and disc diffusion methods. The acetone fraction showed marked antimicrobial activity against ten organisms. Benzene extracts was active against *Morganella morganii* and *salmonella typhimurium* and ethanol extracts against *shigella flexnerii*, *Plesiomonas shigelloids* and *Sh.Sonneii*.<sup>[19]</sup> According to shazid ethanolic leaves extract of *Elaeocarpus serratus* showed antibacterial activity against, *Salmonella typhi*, *Plesiomonas* and *Proteus spp.*<sup>[20]</sup>

#### **Antiulcerogenic activity<sup>[21]</sup>**

- The benzene, petroleum ether, acetone, chloroform and ethanol extracts of dried fruit of *Elaeocarpus sphaericus*, showed antiulcerogenic activities in rats.

#### **Antioxidant activity<sup>[22]</sup>**

- Ethanolic leave extracts of *Elaeocarpus sphaericus* exhibited metal chelating, total antioxidant capacity, reducing power, ABTS radical scavenging and hydroxyl radical scavenging activities. Result shows that the extract showed maximum Iron chelating activity (76.70%) at 500 µg/ ml concentration followed by the scavenging of the ABTS+ radical (55.77%) at the same concentration. However, the extract showed only restrained hydroxyl radical scavenging activity (13.43%). Total antioxidant capacity was found to be 24.18 mg ascorbic acid equivalent at 500 µg/ml extract concentration.

#### **Cytotoxic activity**

- Chloroform soluble bark extract of *Elaeocarpus mastersii* was found to reveal significant cytotoxic activity when evaluated against a panel of human cancer cell line.<sup>[23]</sup> Cucurbitacin D, Cucurbitacins and Cucurbitacin F isolated from *Elaeocarpus mastersii*

showed cytotoxic effect beside KB (human oral epidermoid carcinoma) cells.<sup>[24]</sup> Ethanolic leaves extract of *Elaeocarpus serratus* showed Cytotoxic activity of plant extracts against brine shrimps.<sup>[25]</sup>

## CONCLUSION

*Rudraksha* is a highly valuable plant as it has numerous ethnomedicinal and scientific properties. Different bioactive extracts prepared from *Elaeocarpus species* have shown numerous health promoting effects like antioxidant, antianxiety, antiasthmatic, antihypertensive, anti-inflammatory, antidiabetic and many other activities. Thus, it is very important to know that *Rudraksha* may be effective not only as single herb but also have potentiating effect when given in combination with other herbs or drugs.

## REFERENCES

1. Vaidyaratnam PS, Indian Medicinal Plant, Kotakkal University Press (India) Pvt Ltd, Vol II, 2010; 354-355.
2. K.R. Kirtikar and B.D. Basu, Indian Medicinal Plants, Vol. I, Published by International Book Distributors, Edition, 2005; 403.
3. K.R. Kirtikar and B.D. Basu, Indian Medicinal Plants, Vol. I, Published by International Book Distributors, Edition, 2005; 403.
4. Ayurvedic Pharmacopia of India, Part 1, Vol. IV, 104.
5. Yelne, MB, Notes on the Botanical Identity of Beads Found under the name: Rudraksha, Biorhythm, AYU. Academy series, 1995; 44: 39-44.
6. <https://igldelhi.com>.
7. <https://naturalheritage.intach.org/>.
8. Justice I. Panduranga Rao and Sathyanarayana Swami. Rudraksha Therapy for perfect Health. Ancient Science of life, 1995; 15(1): 21-26.
9. Singh RK, Bhattacharya SK, Acharya SB, Studies on extracts of *Elaeocarpus sphaericus* fruits on in vitro rat mast cells, Phytomedicine, 2000; 7(3): 205-207.
10. Bhattacharya SK, Debnath PK, Pandey VB, Sanyal AK, Pharmacological investigations on *Elaeocarpus ganitrus*, Planta Medica, 1975; 28: 174-177.
11. Singh B, Sharma A, Ishar MPS, Antianxiety Investigations of *Centaurea behen* Linn. And *Elaeocarpus ganitrus* Roxb., Journal of Pharmacy Research, 2012; 5(3): 1483-1486.

12. Shah G, Shri R, Mann A, Rahar S, Panchal V, Anxiolytic effects of *Elaeocarpus sphaericus* fruits on the elevated plus-maze model of anxiety in mice, *International Journal of Pharm Tech Research*, 2010; 2(3): 1781-1786.
13. Rao KS, Rao OU, Aminabee SK, Rao CHRM, Rao AL, Hypoglycemic and Antidiabetic Potential of chitosan Aqueous Extract of *Elaeocarpus ganitrus*, *International Journal of Research Pharmaceutical & Chemistry*, 2012; 2(2): 428-441.
14. Bualee C, Ounaron A, Jeenapongsa R, Antidiabetic and Long term Effects of *Elaeocarpus grandifloras*, *Naresuan University Journal*, 2007; 15(1): 17-28.
15. Rahman A, Wahyuono S, Bates R, Antiinfective compounds isolated from leaves of *Elaeocarpus grandifloras* J.E. Smith, *Indonesian Journal of Pharmacy*, 1998; 9(3): 139-145.
16. Hule AKK, Shah AS, Gambhire MN, Juvekar AR, An evaluation of the Antidiabetic effects of *Elaeocarpus ganitrus* in experimental animals, *Indian Journal of Pharmacology*, 2011; 43(1): 56-59.
17. Singh RK, Pandey BL, Antiinflammatory activity of *Elaeocarpus sphaericus* fruits extracts in rats, *Journal of Aromatic and Plant Sciences*, 1999; 21: 1030-1032.
18. Singh RK, Bhattacharya SK, Acharya SB, Studies on extracts of *Elaeocarpus sphaericus* fruits on in vitro rat mast cells, *Phytomedicine*, 2000; 7(3): 205-207.
19. Singh RK, Nath G, Antimicrobial activity of *Elaeocarpus sphaericus*, *Phytother Res*, 1999; 13(5): 448-450.
20. Shazid MD, Shanker, Shahid IJ, Assessment of antibacterial and cytotoxic activity of some locally used medicinal plants in Sunderban mangrove forest region, *African Journal of Pharmacy and Pharmacology*, 2010; 4(2): 066-069.
21. Singh RK, Bhattacharya SK, Acharya SB, Studies on extracts of *Elaeocarpus sphaericus* fruits on in vitro rat mast cells, *Phytomedicine*, 2000; 7(3): 205-207.
22. Kumar TS, Shanmugam S, Palvannan T, Kumar VMB, Evaluation of Antioxidant Properties of *Elaeocarpus ganitrus* Roxb. leaves, *Iranian Journal of Pharmaceutical Research*, 2008; 7(3): 211-215.
23. Kinghorn AD, Farnsworth NR, Soerjato DD, Cordell GA, Pezzuto JM, Udeani GO, Novel strategies for the discovery of plant derived anticancer agents, *Pure and Applied Chemistry*, 1999; 71: 1611-1618.
24. Ito A, Chai HB, Lee D, Kardono LBS, Riswan S, Farnsworth NR, Cordell GA, Pezzuto JM, Kinghorn AD, Ellagic acid derivatives and cytotoxic cucurbitacins from *Elaeocarpus mastersii*, *Phytochemistry*, 2009; 61(2): 171-174.

25. Biswas SK, Chowdhery A, Das J, Raihan SZ, Muhit MA, Phytochemical investigation with assessment of Cytotoxicity and Antibacterial activities of the ethanol extract of *Elaeocarpus serratus*, American journal of plant physiology, 2012; 7(1): 47-52.