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Holistic Approach of *Eleocarpus Ganitrus* (*Rudraksha*) in Hypertension and Neurological Disorders -A Review.

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ABSTRACT:

We are all aware of the medicinal properties of different plants mentioned in ayurveda. But in science there is always the exception. One such exception to the science of ayurveda is found in the seeds of *Eleocarpus ganitrus* whose seeds are commonly known as *Rudraksh* in India. The plant *Eleocarpus ganitrus* is known for its effectiveness in the treatment of various neurological ailments like sleeplessness, stress, anxiety, depression as well as for hypertension, rheumatism, asthma etc. Most of these neurological problems is caused by vata dosha imbalance which can be rectified by the *Rudraksh* seeds. *Rudraksh* seeds come in multi faced beads. In this review we would not only explore the medicinal properties of *Eleocarpus ganitrus* but would also explore the exceptional qualities of different multi faced *Rudraksh* beads used for treating specific diseases based on their number of faces.

Keywords- *Eleocarpus ganitrus*, *Rudraksha*, hypertension and neurological disorders

INTRODUCTION

The most frequent cardiovascular condition is hypertension. The prevalence of hypertension rises with age; in developed nations, the elderly has a higher incidence of hypertension.¹ The most common cause of stroke is hypertension, which is also a key risk factor for coronary artery disease, myocardial infarction, and sudden cardiac death. It is also a primary cause of heart failure, renal insufficiency, and aortic dissecting aneurysm.² Diuretics, beta blockers, angiotensin converting enzyme (ACE) inhibitors, angiotensin-II receptor blockers, calcium channel blockers, alpha blockers, and other first-line medicines are used to treat hypertension. Adrenergic neuron inhibitors, central 2 inhibitors, and direct

vasodilators are examples of second-line medicines.³ All of these antihypertensive medications have some sort of adverse effect. Hypertension necessitates the use of antihypertensive medications for an extended period of time, which can be harmful to the body.⁴ Hence it is of utmost importance to find a safe and potent alternative to these drugs. **Elaeocarpus ganitrus** Linn. (*Tiliaceae*) known as *Rudraksha*, which is an **Ayurvedic** drug, acknowledged for its antihypertensive activity.

Elaeocarpus ganitrus Linn. (*Gaertn.*) K. Schum (*syn. E sphaericus* Linn.) (*Tiliaceae*) seeds are used to make the medication. Fatty acids, alkaloids, minerals, and vitamins are all found in the seed oil.⁵ According to the Ayurvedic



pharmacopoeia, the seeds are used in the treatment of *uchcha raktatapa* (hypertension) as well as mental disturbances, nerve disease, hypertension, cardiovascular, and hepatic problems in a dose of 1-2 g taken internally.⁶

Review of Literature

Neurological disorder

Diseases of the central and peripheral nervous systems are referred to as neurological disorders. The brain, spinal cord, cranial nerves, peripheral nerves, nerve roots, autonomic nervous system, neuromuscular junction, and muscles are all included. These disorders include epilepsy, Alzheimer's disease and other dementias, cerebrovascular diseases such as stroke, migraine and other headache disorders, multiple sclerosis, Parkinson's disease, neuro infections, brain tumours, traumatic neurological disorders caused by head trauma, and neurological disorders caused by malnutrition. Many bacterial (Mycobacterial TB, Neisseria meningitides), viral (HIV, Enteroviruses, West Nile Virus, Zika), fungal (Crypococcus, Aspergillus), and parasitic (malaria, Chagas) illnesses can impact the nervous system. Neurological symptoms might emerge as a result of the illness or as a result of an immune response. Neurological problems impact hundreds of millions of individuals globally. Every year, more than 6 million individuals die as a result of a stroke; more than 80% of these deaths occur in low- and middle-income nations.⁷ Epilepsy affects more than 50 million individuals globally. It is estimated that there are 47.5 million individuals worldwide who have dementia, with 7.7 million new cases per year. Alzheimer's disease is the most frequent cause of dementia, accounting for 60-70% of cases. Migraine affects more than 10% of the world's population.⁸ Ayurvedic neurology is mostly addressed in the context of *Vatavyadhi*. Ayurvedic remedies for neurological illnesses will seek to correct this *Vata* imbalance and bring the *Vata dosha* into balance with the *Pitta* and *Kapha* doshas in order to remove the sickness.⁹

Ayurveda concept of *Elaeocarpus ganitrus*

The *Rudraksha* plant is regarded as the "King of Herbal Medicines." The *Rudraksha* plant's bead leaves and bark are used to treat diseases such as *dahashaman* (burning sensation) in paste form, *swasroga* (bronchial antispasmodic), *jwar* (fever), *apasmara* (epilepsy), and *matissudhikara* (cure mental condition) and skin diseases such as measles, sores, boils, ringworm, and pimples. It

aids in the relaxation of the mind and the reduction of body temperature. The seeds of the *Rudraksha* plant have a beneficial impact on neurological and circulatory disorders and are utilised in acupuncture and magnetic treatments. The *Rudraksha* plant's bead is used to balance the three essential chakras of the human body: *Vata*, *Pitta* and *Kapha*. According to the Ayurvedic medicinal system, wearing a *Rudraksha* bead heals anxiety, stress, strain, sleeplessness, depression, infertility, improves self-confidence, mental stability, rheumatism, asthma, hypertension, palpitation, loss of concentration, and has a favourable impact on nerves and heart.¹⁰ The three-sided *Rudraksha* bead aids in the treatment of childhood fevers. The seeds and fruits of the *Rudraksha* plant are used in Ayurveda to treat psychosomatic illnesses, fever, and headaches. They also have electromagnetic and inductive qualities that regulate and control the flow of bioelectric current in the body.¹¹ The number of grooves or mukh is present on a *Rudraksha* determines its kind, which has varied qualities. Five-faced *Rudraksha*, for example, has an antihypertensive characteristic that aids in blood pressure regulation. When consumed with milk, the decoction of ten-faced beads treats cough. Boiling a four-faced *Rudraksha* bead in a glass of milk has been shown to help *manas roga* people with mental illnesses and impaired memory. A unique Mukhi of *Rudraksha* bead gives resistance to the body by delivering a specific sort of biochemical in the brain that triggers specific beneficial changes in a person's personality, confidence, and optimism in mood.

Formulations of *E. ganitrus*^{12,13}

The different formulation of the *E. ganitrus* plant include *Gorochanadi Vati*, *Mrtasanjivani gutika*, *Svarnamukladi gutika*, *Dhanwantara gutika*, *Cukkumitppalyadi gutika*, *Rudraksha churna*, *Rudraksha hima (cold infusion)*, *Rudraksha Milk*, *Rudraksha decoction (gargling)*, *Rudraksha Lehyam*, *Rudraksha Vibhuti*, *Rudraksha oil*, *Rudraksha eyedrops*, *Rudraksha paste* and *Rudraksha bhasma*.

Actions and properties of *Rudraksha*^{14,15}

- *Raksoghna*: It acts as a disinfectant for various microbial diseases.
- *Medya*: It enhances the memory and intellectual power of the person.
- *Hridyam*: It is given as a cardi tonic to cure heart diseases.

- *Vataghna*: It balances the *Vata* component and helps in treating chest pain and early symptoms of rheumatic pain.
- *Kaphanashak*: It balances the *Kapha dosha* and hence is used to cure the early stages of asthma and used to treat allergies, obesity, swelling and rhinitis.
- *Shirathi Shamanam*: It is used to treat migraine.
- *Ruchyam*: It is used to cure stomach-related disorders like indigestion, gases and tastelessness.
- *Bhutagrah Vinashanam*: It is used to cure mental disorders, bad effects of evil spirits and planetary afflictions.
- *Vedanasthapan*: It is used as an analgesic.
- *Pachansansthana*: It regulates the peristaltic movement and helps in treating liver disorders. *Raktwahasnsthana*: It is used to treat hypertension and acts as an anti-hypertensive agent.
- *Shwasansansthana*: It acts as a bronchodilator and is used to cure cough and other breathing problems like asthma.
- *Taapkaram*: It acts as an antipyretic agent. The paste of *Rudraksha* and *Chandan* plant has an effective result in the treatment of measles, pimples, chickenpox and other skin-related diseases.
- *Manasvikar*: It is used to treat mental disorders, provide mental peace and cure psychosomatic diseases and enhance memory power.
- *Aakshepak*: It is used to treat epilepsy problems.
- *Aaptantrak*: It is used to treat hysteria.
- *Anidra*: It is used as a curative agent against insomnia.
- *Yakritvikar*: It is used to cure liver disorders by increasing metabolism. *Kamla*: It is used to treat jaundice.
- *Rakta-chaap*: It is useful in the treatment of blood pressure problems.

Folk uses of *Rudraksha*

E. ganitrus, often known as *Rudraksha*, is revered as the most sacred and spiritual plant in Hinduism.¹⁶ According to Hindu mythology, it is Lord Shiva's favourite tree since it grew from the tears of Lord Shiva's three eyes, which symbolise the sun, moon, and fire. *Shiv Puran*, *Devi Bhagwat Puran*, and *Padma Puran* provide brief descriptions of the *E. ganitrus* plant's ancient literature.¹⁷ According to the literature, this plant originated in the Tarai area of the Himalayas.¹⁸ According to Hindu mythology, *Rudraksha* is a symbol that connects earth and heaven. It carries within itself the secrets of the entire universe' development.¹⁹ It is also believed for centuries that wearing of *Rudraksha* bead helps in attaining physical and mental power to accomplish spiritual enlightenment.²⁰ According

to *Shiv Purana*, wearing a rosary of *Rudraksha* beads as an ornament around the neck, wrist, arm, and head makes the person courageous and ensures that the person cannot be slain by any living entity. *Rudraksha* beads are traditionally classed depending on their faces, *mukhas*, or clefts. According to ancient texts, there are around 38 varieties of *Rudraksha*, with one *mukhi* and fifteen to twenty *mukhi Rudraksha* being uncommon and costly. *Rudraksha* beads are sanctified before wearing by singing a specific Beej mantra and executing certain rituals and ceremonies. The *Rudraksha* plant has traditionally been used to treat stress, anxiety, loss of focus, depression, and palpitation. A five *Mukhi Rudraksha* is used against anxiety and stress disorders which works if the *Rudraksha* bead is held tightly in the right palm for ten minutes. It will help in reforming their confidence and make their bodies stable. The *Garbh Gauri Rudraksha* bead is thought to have beneficial benefits on women who have had difficulty having a child or who have had a miscarriage. It can also aid ladies who are experiencing hysterics or coma. When eaten three times a day with milk, the paste of ten-faced *Rudraksha* beads aids in the treatment of chronic cough. It may also be used to treat ringworms, pimples, boils, blisters, and other skin conditions. Wearing a three-faced *Rudraksha* bead might benefit youngsters who have regular fevers. When consumed with water, the powdered form of *Rudraksha* bead combined with the same amount of black peppercorns aids in the treatment of smallpox sickness.²¹ When the four-faced *Rudraksha* bead is cooked with milk, it helps to cure mental illnesses and improve memory. The herb contains anti-aging benefits as well. The fruits of the *Rudraksha* plant have shown good antimalarial, fever-controlling, and antipyretic properties.²² Fruit flesh is beneficial in the treatment of epilepsy.²³

Modern view

The *Rudraksha* plant is currently regarded as the most precious and significant herbal plant. The growing population increases demand for the *Rudraksha* plant and its derivatives. To meet public demand, fake manufacture of *Rudraksha* plant goods has increased to boost business. In today's world, seldom faceted *Rudraksha* beads such as *Ekk mukhi* (one-faced) beads are intentionally made to meet public demand and generate more money. As a result, it is critical to inspect the quality and purity of authentic beads. It may be checked in a variety of ways, including the copper coin test, in which the bead is placed between two copper coins and spins slightly if it is genuine. The

original may be tested due to the existence of electromagnetic characteristics such as resistance, capacitance, inductance, and magnetic forces. The water test may also be used to verify the beads like Trijuti and Gauri-Shankara by boiling them in water, which causes discoloration in a fake one. Furthermore, a genuine bead sinks in water, but an imitation bead made of wood loaded with lead might sink and provide false illusions.

Some Researches of *E. ganitrus(Rudraksha)* in hypertension and neurological disorders

- **Anti-Hypertensive Activity** - Hypertensive vascular disease is a common entity readily detectable, asymptomatic at times, easily treatable usually and often known to lead to lethal complications if left untreated. Blood pressure is summarised by two measurements, systolic and diastolic, which depend on whether the heart muscle is contracting (systole) or relaxed between beats (diastole).²⁴ This equals the maximum and minimum pressure, respectively. Normal blood pressure at rest is within the range of 100–140 mmHg systolic and 60–90 mmHg diastolic. High blood pressure is said to be present if it is often at or above 140/90 mmHg.²⁵The powdered seeds of *Elaeocarpus ganitrus* Linn. were extracted by maceration, overnight, using water, in copper (E1) and glass vessel (E2) and investigated for antihypertensive activity in cadmium chloride induced hypertension in male Wistar rats at three dose levels. E1 was administered at the different dose and E2 at different dose and both (E1 and E2) did not show any toxicity at the dose of 5 g/kg in rats. It was found that 15 mg/kg of E1 and 30 mg/kg of E2 decreases the blood pressure by 30.20 mmHg and 28.96 mmHg, respectively, in hypertensive rats & also the water extract of *Elaeocarpus ganitrus* seeds (EGW) was studied for its antihypertensive activity in renal artery-occluded hypertensive rats and the extract was prepared by macerating the seeds powder in distilled water for 24 hours than dried in hot plate evaporator at 50–550 C than the dried EGW was administered orally to male Albino Wistar rats at three different doses for six weeks.²⁶ At the day of experiment, hypertension in anaesthetized rats was induced by the occlusion of renal artery for 4h and carotid artery was connected to blood pressure transducer of Power Lab eight channel recorder to measure the blood pressure and jugular vein was also cannulated for administration of the test compound. After obtaining stable blood pressure values, the renal arterial clip was removed and the Mean arterial blood pressure (MABP) was measured. MABP of

animals in control group was measured without renal artery ligation. Then 1/10th of dose of test substance was administered by intravenous injection to experimental rats and MABP was measured. Captopril, an angiotensin converting enzyme inhibitor (ACE-I) was used as a positive control and the results showed that the EGW significantly decreased the elevated blood pressure in dose dependent manner comparable to positive control, captopril & also the effect of *Elaeocarpus ganitrus* in experimentally induced acute hypertension by adrenaline and nicotine was study & done in 6 anaesthetised cats having similar body weight and age.²⁷ Ethanol extracts of *E. ganitrus* Roxb was given intravenously to cats and blood pressure was measured by using Pressure transducer and Polyrite (INCO) & it show that *E. ganitrus* reduces adrenaline induced hypertension and also normal blood pressure but it is not effective in nicotine induced hypertension. The effect of the drug was found when the water soluble portion of the extract was given to cats & also the aqueous extract of *Elaeocarpus ganitrus* seeds powder was evaluated for its antihypertensive activity in renal artery occluded hypertensive rats & for this male wistar rats were pre-treated with aqueous extract of *E. ganitrus* for 6 weeks and hypertension was induced in animals by clamping the renal artery with renal bulldog clamp for 4 h.²⁸ Ischemia of the kidneys causes elevation of blood pressure by activation of the renin-angiotensin system. Elevated blood pressure of the animals was significantly decreased by the aqueous extract of *E. ganitrus* at the different dose. Captopril, angiotensin converting enzyme inhibitor (ACE-I) showed significantly reduced in the elevated blood pressure & indicated that antihypertensive activity of aqueous extract of *E. ganitrus* may be due to the action on rennin-angiotensin system.²⁹

DISCUSSION

In Ayurveda, it is believed that the wearing of *Rudraksha* beads has a positive effect on the heart and nerves and is also used to cure psychosomatic diseases. Also, Ayurveda practitioners use *Rudraksha* beads, bark and leave to cure diseases like mental disorders, headache, infertility, epilepsy, piles, ulcers, hysteria, coma, snakebites, fever and skin diseases. Besides this, *Rudraksha* beads possess numerous powers and help in empowering the heart and circulatory system due to the presence of diamagnetic properties, electrical properties, bioelectric circuits and electromagnetic character. Various phytochemical constituents extracted from the leaves, bark, root and fruit

of the *Rudraksha* plant possess different pharmacological and therapeutic properties. Traditionally, the *Rudraksha* plant is used to cure anxiety, stress, depression, palpitation, asthma, hypertension, epilepsy, nerve pain, arthritis, migraine and liver disorders. It has anti-aging benefits as well. According to the studies, various extracts or phytochemical constituents found in the *Rudraksha* plant have anticancer, antidiabetic, antidepressant, anti-asthmatic, anti-inflammatory, analgesic, hypertensive, antifungal, antioxidant, and antibacterial properties.

CONCLUSION

The *Rudraksha* plant is regarded as the most significant herbal plant, with spiritual, astrological, and medical significance. According to Hindu mythology, those who wear *Rudraksha* beads gain mental and physical abilities. The electromagnetic property of the *Rudraksha* plant has also been discovered, which is highly advantageous to the human body as it aids in the treatment of numerous disorders. The plant has drawn the attention of not only humans, but also scientists, medics, and sages who are interested in the *Rudraksha* plant due to its potency and qualities.

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