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CRITICAL REVIEW ON PIPALLI (PIPER LONGUM) AS PER ANCIENT ASPECT AND RECENT ADVANCES WITH PHARMACOTHERAPEUTIC PROPERTIES

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Abstract :-

Pippali is one of the important medicinal plant its botanical name is Piper longum linn and family piperaceae. it is one among the constituent of trikatu, panchakola, shadushna etc, and widely used in Ayurveda for the treatment of various disorders. The primary constituents isolated from various parts of P. longum are piperine, piperlongumine, sylvatin, sesamin, diaeudesmin piperlonguminine, pipermonaline, and piperundecalidine. It is used as prakshepaka dravya in many formulations. It is highly valued from time immemorial because of its vast medicinal properties .It is most commonly used to treat chronic bronchitis, asthma, constipation, gonorrhea, paralysis of the tongue, diarrhea, cholera, chronic malaria, viral hepatitis, respiratory infections, stomachache, bronchitis, act as a appetizer, diseases of the spleen, cough, and tumors. The present article provides all necessary information regarding its classical literature and the advance therapeutic use of this species.

Key words- pippali, piper longum, trikatu, primary constituent

Scope of Future :

Ayurveda is a treasure house and its herbal drugs has a multifactorial effects in wide range of diseases. Interventional evidence based medicine shall set a new horizon for ayurvedic herbs in future.

Keeping in mind the ayurvedic benefits and its role in combating bacteria various interventional study can be carried out by deciding doses, pippali's immunomodulating action can be studied in various lung diseases.

Research outcomes:--

Researches made on the drugs are always proved healthy in terms of community for their knowledge and better survival, for govt. To take appropriate Researches decisions and in providing better facilities to the citizens, for industries too enhanced their performances, quality and providing employment to many needy and qualified once also a platform to build them globally.

Introduction:-

The word pepper is derived from the Sanskrit word for long pepper (pippali). Long pepper (Piper longum), sometimes called Javanese, Indian, or Indonesian long pepper, is a flowering vine in the family Piperaceae cultivated for its fruit, which is usually dried and used as a spice. Long pepper is a close relative of P. nigrum, which gives black, green, and white pepper and has a similar but generally hotter flavor. The fruits contain the alkaloid piperine, which contributes to their pungencyThe nirukti of word Pippali signifies its action in maintaining total health and also in dhatu poshana and poorana. Pirpathi paalayathi purusham purayathi cha ksheenan dhatunithi pru palanapuranayo.

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According to acharya charak , pippali vardhman rshayan explain in cahrak chikitsha rshayan 3rd paad (Karprchiyati) , acharya shushrut explain the pippali vrdhman rshayan in Vatrakt disease, and acharya kashyap explain in Rajyakshma disease.

1. In Ayurvedic medicine, it is said to be a good rejuvenator. P. longum stimulates the appetite and dispels gas from the intestines. An infusion of P. longum root is used after birth to induce expulsion of the placenta
2. The whole plant as well as plant parts such as the fruit are used traditionally, This plant is inexpensive, readily available, and effective for many diseases, including cancer, inflammation, depression, diabetes, obesity, and hepatotoxicity.

Review of literature:-

BOTANICAL DESCRIPTION OF PIPPALI:- The plant Pippal? botanically identified as Piper longum Linn.(Piperaceae family). It is commonly available in the hotter parts of India from central Himalayas to Assam. Khasi and Mikir hills, lower hills of Bengal and ever green forests of Western ghats from Konkan to Travancore. It is an aromatic slender climber with perennial woody roots. Stems are creeping, jointed, attached to the other plants while climbing. Leaves are 5-9 cm× 3-5 cm, sub-acute, entire, glabrous, ovate, cordate at the base. Flowers are in pendulant spikes, straight. Male flowers are larger and slender while female flowers are 1.3- 2.5 cm× 4-5 mm diameter generally. Fruits are ovoid, yellowish orange, small berries in fleshy spikes. Dried fruits are greenish-black to black, cylindrical, 2.5 to 5 cm long and 0.4 to 1 cm thick, consisting of minute sessile fruits, arranged around an axis, surface rough and composite, broken surface shows a central axis and 6 to 12 fruit lets arranged around an axis, taste is pungent producing numbness on the tongue and odour is aromatic.

THERAPUTIC USES OF PIPPAL? IN VEDIC K?LA :--

By searching the history of Vedic period it has been found that the drug Pippal? has specially mentioned in Atharva Veda as Ras?yana, K?ipta Bhe?aji, Atividdha Bhe?aji and Vat?k?ta Bhe?aji.

?ch?rya S?yana has opined that the drug is useful in the treatment of Dhanurv?ta, ?k?epaka etc., (V?tavy?dhis). Hindu mythology revealed that Pippal? has its origin during Samudra Manthan (oceanic infuriate) along with am?ta (elixir). Jaimin?ya Br?mha?a delineated that the saint Va?i?ha consumed Pippal? to attain health and wealth. In Kou?ika Dharmas?tra Pippal? was recommended to neonates along with other herbs and this process has claimed to be Medhya (intellectual power). It has been specified among the Bhe?aja Ga?a of Atharva Pari?i??a. The Ke?ava Paddhati (26/33-40) recommended this drug for V?ta Vik?ras. All these information indicates that Pippal? is a famous old drug known to Indians for a long time and its antiquity goes beyond 2000-3000 years.

AYURVEDIC DESCRITION OF PIPPAL? :--

The term Pippal? indicates- Piparti p?layati puru?a? p?rayati ca k????t (helps to nourish the emaciated beings). Its having various synonyms in different contexts as- Upakuly? i.e Kulyamupa sam?pe gat? jayaman? (it grows along sides of water streams), ??a?? i.e. ??ati rasan?? vyathayati ka?utv?t - due to Ka?u rasa (pungent taste) and U??a (hot potency), Ka?? i.e. Ka??k?raphalatv?t - fruits are small berries, K???? i.e.

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K???aphal?, pakve sati phal?ni rakt?ni, tadanu ?u?k?ni K????ni bhavanti- fruits are black when dried, Kol? i.e. Kola pram?na? phalamasy??, Ka?u tv?cca- due to pungent it is mentioned as kola pram?na dose, Capal? i.e. Capati ?amayati rog?n, l?ti c?rogyamiti- it is useful in many disorders to gain healthy life, T?k??a ta??ul? i.e. T?k??a ta??ul? b?j?nyasya- the seeds are T?k??a, M?gadh? i.e. Magadhe?u bhav? - growing mostly in damp regions of Magadha, Vaideh? i.e. Videhe?u bhav? - growing mostly in damp regions of Videha, ?au??? i.e. ?u??? madya p?nag?ham, tatra hita, mady?bhi?ave madyap?ne coupada??ar?pe?a prayojyatv?t, ?u???k?raphalatv?cca- it is also used in distilleries and bars and fruits adhered in solid fleshy spike like elephants trunk.

Medicinal properties according to Ayurveda Vata kapha shamaka: due to its hot potency it is used in cough and cold diseases.

Swasah-powder of pippali,amalaki and sunthi is taken with honey and sugar Rasayana-ghee prepared with pippali and milk is used Chardi-pippali churna should be given with honey and sugar Twak roga-pippali is rejuvenator of rasa and rakta dhatu and is useful in skin disorders Krimighna-because of katu rasa ,tikshna and ushna properties it acts krimighna.

According to modern science:-

1) **Anticancer activity:-**The alcohol extract of P. longum (10 mg/dose/animal) and piperine (1.14 mg/dose/animal) inhibits solid tumor development in mice induced with Dalton's lymphoma ascites cells and increases the life span of mice. Piperine was also found to be cytotoxic towards Dalton's lymphoma ascites and Ehrlich ascites carcinoma cells at 250ug/ml.
2) **Antioxidant activity:-** P. longum exhibits promising antioxidant potential against free radical-induced oxidative damage. Petroleum ether extract of the root and piperine from roots of P. longum Linn. decrease lipid peroxide levels and maintain glutathione content, demonstrating antioxidant activity .
3) **Hepatoprotective activity:-** The plant fruit extract was assessed in rodents for its hepatoprotective action against carbon tetrachloride-induced acute, chronic reversible and irreversible damage using morphological, biochemical, and histopathological parameters. The extract stimulates regeneration by restricting fibrosis, but offers no protection against acute damage or against cirrhosis. Piperine was found to protect against tertiary butyl hydroperoxide-induced and carbon tetrachloride-induced hepatotoxicity by reducing lipid peroxidation in vitro and in vivo
4) **Anti-inflammatory activity:-** A marked anti-inflammatory activity of P. longum fruit decoction has been reported using carrageenaninduced rat edema
5) **Antimicrobial activity :-** Petroleum ether and ethyl acetate extracts of P. longum were found to exert antimicrobial effects against various microorganisms.
6) **Antiplatelet activity:-** The inhibitory effects of the four acid amides piperine, pipernonaline, piperoctadecalidine, and piperlongumine, isolated from the fruits of P. longum L. were evaluated on washed rabbit platelet aggregation. All of the four tested acid amides dose-dependently inhibited washed platelet aggregation induced by collagen, arachidonic acid, and platelet-activating factor, but not that induced by thrombin

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7) **Antihyperlipidemic activity:-** The ethanol extract of the P. longum L. fruit yields piperlonguminine, piperine, and pipernonaline as the main antihyperlipidemic constituents. They exhibit appreciable antihyperlipidemic activity in vivo, which was comparable to that of the commercial antihyperlipidemic drug simvastatin .

8) **Antidepressant activity:-** Ethanol extraction of P. longum fruits yields a known piperidine and piperine alkaloid, as a monoamine oxidase inhibitor. Thus the piper longum fruits represent a promising pharmacotherapeutic candidate against depression

9) **Coronary vasodilation:-** The amide dehydropipernonaline isolated from the fruit of P. longum L. has demonstrated the ability to induce coronary vasodilation.

10) **Antiobesity activity :-** Pharmacological inhibition of acyl CoA diacylglycerol acyltransferase has emerged as a potential therapy For the treatment of obesity. Compounds containing piperidine groups are considered potential acyl CoA diacylglycerol acyltransferase inhibitors .

Materials and Method:- This review focused on studies of the Pharmacotherapeutic activities of piper longum published . The literature search was based on several databases like web of science, scifinder, pubmed, scopus, embase and google scholar. Discussion and Conclusion Recent researches in pharmacological studies as well as traditiona.

Discussion and Conclusion:--

Recent researches in pharmacological studies as well as traditional uses of piper longum has proved significant medicinal properties of the drug and these are being continously used to cure various diseases in this era. Now a days a huge amount of phytochemicals specially the alkaloids which have been identified with their medicinal properties such as anti-cancerous, anti-diabetic, antiobesity, anti-malarial, anti-helminthic etc. It is also used in commercial production of alkaloids containing this drug and its needs to be an urge since movements were successfully identified in cultural media. So researches are need to be done by focusing on making novel life saving drugs with powerful combination of natural resources. Instead of using drugs which works symptomically on the bodily issues and have more side effects too one can prefer for ancient medicines asthey work on strenthening of body tissues first then simultaneously fight against the disease and also having lesser side effects as the other ones don't works symptomatically and not systematically.

Correlation with ancient Indian literature:--

Pippali is an aromatic slender climber and also known by the name piper longum in modern science. It is being used in ayurvedic pharmaceutics in many formulations from very long as a very effective drug. it is drug of hot potency so can be used in diseases like in cough cold, several others like diabetes, in skin diseases, obesity cancer, helminthic diseases, in inflammation, and many more. Usefulness' of the drug can be seen in ayuvedics texts clearly.

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