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Aim -: To review on antidiabetic activity of vinca

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Abstract

Cathranthus roseus is an important tropical medicinal plant it is a seasonal to perennial garden plant and the exclusive source of the anticancer drug vincristin and vinblastin. A part from this its leaves and roots hyper accumulates. The other terpenoids indole alkaloids which are required for the ecohnomics production pharmaceutical molecules indoline catharanthine, ajmalicine and serpentine, the plant have been used for various medicinal valued like antidiabetic , antidiarrheal properties. Diabets mellitus is a metabolic disorder which is characterized by hyperglaucoma due to increased in hepatic glucose production decrease insulin secreation and impaired insulin action. The highest diabetic wound activity,healing activity was observed with ethanol extract is attributed due to the presence of alkaloids, tannins and triterpenoids. The review describes pharmacological application and phytochemistry of catheranthus roseus.

Key words -: Cathranthus roseus, vincristin and vinblastin, medicinal properties, antidiabetic activity and antidiarrhealactivity,

INTRODUCTION: The flower ,catharanthus roseus , is an undershurub that is erect , decumbent ,deciduous and generally has white latex . the plant is shown inside in a variety of geographic setting , especially the regions where subtopical plants are grown . gardens in the range of climates , form semi-arid to tropical because of propensity to produce blossoms wherever the season ,diminutive starure , and longevity. Generally occurs in the majority of the tropical and subtropical occurs on every continent , with the exception of on numerous islands in Antarctica. Very infrequently as low as those that are found in temperate areas snow temperatures prevent it from growing .the quality of being highly adaptable to all sorts of soil allows easy this is geographically distributed india spread flooded and extremely for this plant, alkaline soils are not suitable species. Cantharanthus (L) g. don's name is a translation of the latin terms (pure) both, anthos [flower]. Several name, including lochnera rosea, ammocallis rosea,and the majority vinca rosea was frequ ently employed. , the haploid genome of the diploid plant species roseus is thought to be between 696 and 2377

Mbp in size [1,2]. More than 100 million people worldwide are currently living with diabetes mellitus [DM], the most prevalent endocrine illness. Due to ageing and population expansion, diabetes is rising .and rising rates of obesity and physical inactivity microavability [3,4]438 million adults(7.8./.) are predicted to have diabetic by the year 2030,according to recent estimates5. A few causes like strain, accelerated city growth, and significant a rise in purchasing power, life style convenience, and urban life has contributed to health problems and an increase in population attacked with such illnesses. [5,6] According to the literature , vinca minor L. plant material is valuable sources of antimicrobial compounds .alcoholic extracts of this plant have been shown to have antibacterial and antifungal effects on a variety of bacterial and fungal cultures. Natural plant products are a good source of compounds that have antibacterial characteristics; these compounds are mostly active against bacteria and fungi. herbal extract may become valuable therapeutic tools given that many of these compounds could be used to create new medication [7] There are numerous secondary metabolites found in significant natural antimicrobial compounds derived from the vinca minor L.plant that are beneficial for brain health (increasing blood flow to the brain,) externally ,they aid in tissue regeneration and the healing of skin lesions [8]diabetes is characterized by persistent hyperglycemia and abnormalities in the metabolism of fat, protein, and carbohydrate, which lead to insulin secretion, insulin action, or both,according to the world health organization .the long – term effects of diabetes mellitus include organ loss and malfunction. Sweet diabetes consist of signs like thirst, polyuria , impaired eyesight, and weight loss [9] The plant vinca rosea's leaves,flowers, and root all untilised as herbs in traditional treatment. Both Chinese medicine and ayurvedic medicines employ extract. Traditional use for flower extracts as a newborn eye wash and leaf juice to cure wasp stings. Diabetes and a cough are both treated by periwinkle tea [10]. Additionally used internally for memory loss, hypertension, cystitis, gastritis, and interties, diarrhea, and elevated blood sugar level, its extract is used to heal mouth ulcers and sore thorast. Vinca rosea as demonstrsted dose dependant blood giucose lowering in both normaland diabetic rabbits, comparable to that of the widely used medication glibenclamide [11]

Figure 1. *Catharanthus roseus* plant.

Vinca [sadabhar]

Synonym -; Vinca roseus, sadhabhar

Family -;Apocynacea

Biological source -; It is obtain form vinca in dried entire plant of cathranthus roseus.

Macroscopical characteristic -;

Colour -; its leaves are green roots are pale grey flowers are pinkish white

Odour -; characteristics

Taste -; Bitter

Leaves -; simple petiolate

Flower -; Ovale complete and hermaphrodite

Fruits -; Follides with many black seeds

Chemical constituent -; About 150 alkaloids have been isolated from cathranthus roseus or vinca Ex – ajmalicin , serpentine, tetrahydrolastanins, lochner, etc. The plants contain large number of indole indoline alkaloids i.e vinblastine and vincristine. Any they pass definite anti-cancer activity or antineoplastic activity.

Chemical test: Vincristine sulphate crystals are obtain from ethanol and are found to be unstable .It also contain omnoterpenes sesauiterpene indol are indoline glycosideserpenes sesauiterpene indol are indoline glyco-sides**Medicinal properties**

Medical plant species with antidiabetic property

Various plants have been reported to have therapeutic properties, antidiabetic, which is grouped according plant **Medicinal properties**

Tropical nations are frequently home to the perennial plant catharanthus roseus (apocynaceae). It is additionally referred to as Madagascar periwinkle. This a plant yields lovely flowers with a variety of widely used colours are purple ,pink ,and white .planted for aesthetic reasons [12] in the past ,madagascar periwinkle was utilized for a variety of therapies ,including those for diabetes , high blood infection and pressure. The plant's leaf includes ninety distinct alkaloids. The ones that are most plentiful molecules like vindolin and catharanthin [13].

Mechanism of action antidiabetic

Potassium chanel blockede in pancreatic beta cells and situations of the secondary messenger CAMP .retinal glucose reabsorption is inhibeted .inhibition of insulin – degradative processes and stimulation of insulimn se-cretion from beta cells in the islets oflangerhans. Lower insulin resistance. Providing a few essential nutrients for the beta, including calcium, zinc, magnesium, manganese, and copper [14, 15]

Phytochemistry of property

The plant's flowering portion has a large quantity of triterpenoids, tannins, and alkaloids have been discovered to have antidiabetic properties.wound healing capabilities [16] The kaliod like vincristine and vinblastine , al-stonine is produced using c.roseus's rootbark. Historically, it has been a sedative [17] alkanoids, flavonoids , and other phytochemicals are abundant in catharanthus ruseus's vegetative and root part .tannins, saponin , cocuma-rin, triterpenoids, carbs , phenolic compounds , and quinine compounds [18] the cathranthus leaf roseus are abundant in carbohydrates and alkaloids . The plant roots and stem contain quinines, which has some anti

Medical plant species with antidiabetic property

Various plants have been reported to have therapeutic properties. antidiabetic , which is grouped according to a plant'smicrobial properties [19]

Antidiabetic Activivity

Vinaca rosea has ethanolicextracts in its flowers and leaves that are comparable to the common medication glibenclamide a hypoglycemia agent. The development of hypoglycemic action is a result of as a result of the liver's increased use of glucose [20, 21, and 22] hypoglycemic activity has been noted as a result of the liver's use of

glucose. Extract of dichloromethane: menthanol (1:1) has hypoglycemic effects on the twigs and leaves of vinca induce diabetic rats with streptozotocin. Model at the 500 mg / kg dose, which has oral administration for 7 to 15 days. 48.6 and 57.6 ./. There was evidence of hypoglycemic activity, and additional undergoing treatment for 30 days has produced total defence against STZ challenge (75) mg/kg/i.p.) Glucose 6-glycogen synthase succinate dehydrogenase and phosphatedehydrogenase and malate dehydrogenase are the activity of the enzymes. Which cause diabetic animals' livers to shrin, and it is improved with the application of extract at a 500 mg/kg orally every day for 7 days. It suggests the an increase in the rats' glucose metabolism, which are receving higher lipid per treatment [23]

Antimicrobial activity

As the majority of the bacterial microorganism was improving, roseus was discovered to be a significant restorative plnt for the production of innovative medications. Obstacle against a sizable portion of the adversary that is readily available of antimicrobial drugs. It has been encouraged for plants to crucial ongoing resources for the dynamic chemotherapeutic operators and suggest engaging in a variety of activities with the a stronger emphasis being placed on preventive action [24]

Pharmacological Application

The plant displayed a wide range of pharmacological traits, highlighting its significance in medicine. Active substances vinblastin and vincristine were extracted from the leaf and steam sections and demonstrated suppression of human tumours. Vinblastin is a plant alkaloid that has been isolated and is indicated for the treatment of choriocarcinoma and hodgkins disease. Vincristin is being tested as treatment for paediatric leukaemia. vincristin and vinblastin are both used to treat cancer. Several diseases are prevented by using the leaf extract, which has been tested. The vincamine alkaloid contained in plant leaves exhibits cerebro-vasodilatory and neuroprotectiv action.was discovered on the plant leaf's vincamine alkaloid. Experiments using the plant's leaves showed antiulcer activity and stomach ulcer prevention injury in rats. Due to the abundance of phytochemicals the plant's components can be employed as an essential future therapeutic assistance [25]

Anti -diarrheal property

Castor oil and ethanolic leaf extracts are used to assess the anti-diarrheal effects in wistar rats. diarrohea trial has pretreatment extract. The dose demonstrated the anti-diarrheal effect. Dependent suppression of castor oil induced inflammation diarrhea [26].dose deparment suppression of the diarrhea from castor oil caused at doses of 200 and500 mg/kg in addition to the suppression of charcoal meal's gastrointestinal propulsion. This data support the use of vinca in traditional medicine in diarrhea management and therapy [27]

Ethno medicinal importance

761 epublished by scholars Middle East publishers, Dubai, United Arab Emirates roseus cathranthus is a significant ancient plant medicine used to treat a variety of diseases many illnesses. In the past, C. rosea was utilised for different therapies for high blood pressur, diabetes, and infection and pressure. There were about 90 alkaloids detected. The most prevalent monomers are in the leaf portion and vindoline and catharanthine. The products of ethyl-apovincaminate, or vincamine vinpocetine was frequently utilised in blood medicine. Memory-enhancing, blood vessel-dilating, and plaques with atherosclerosis [28]. The juice from the leaves of the bee stings and wasp stings can be treated with plant extracts. When babies were young, floral extract was used as an eye wash. jamica and cuba. Rheumatoid arthritis and menorrhagia tended to bythe leaf infusion [29].

Utilization

In ayurvedic medicines, the leaves, flowers, and roots are all employed. Chinese medicines treat ailments like diabetes, malaria, and leukaemia with the plant's extract. Likewise hodkin disease. The leaf used in traditional medicines juice has been used as a wasp sting remeady, as a gargle floral extracts are used for sore throats, baby's eyeswash. Used for periwinkle tea as a remedy coughing and diabetes. The stems and leaves are the source of cancer-preventive and toumor-fighting alkaloids. The leaves are employed in controlling both excessive blood pressure and diabetes. Alkaloids additionally provide sedative and calming effects. It calms due to this quality, it causes sadness and muscle discomfort. It is utilized for detoxification and toxin removal. So as to soothe wasp sting. This plant regulates the nose bleeding gums, mouth ulcers, and throat pain. When used, it helps treat conditions such as gastritis, cystitis, enteritis, diarrhea, and diabetes internally. The plant vinca rosea ensures brain health. Components in health. Ita catives inceases blood flow boost the amount of oxygen going to the brain, brain can use. Moreover, it increases serotonin levels and inhibits blood from abnormally coagulating. The kaliod vincamine has memory and keeps blood thin improving qualities. Therefore, it is helpful. Prevention, particularly vascular, of dementia. Consuming periwinkle can be risky orally. Pregnant women should stay away from the plant women [30]

Plant Containing Anti-Diabetic Activity-;

Sr. No.	Plant part	Plant	Family	Reference
1	Leaves and bark	Azadirachtaindica	Meliaceae	31
2	Root	Bruguieragymnorrhiza	Rhizophoraceae	32
3	Whole plant	Biophytumsensitivun	Oxalidaceae	33
4	Fruit	Helicteresisora L..	Malvaceae	34
5	Leaf juice	Lantana camara	Verbenaceae	35
6	Leaves	Murray koenigii linn.	Rutaceae	36
7	Leaves	Ossimumgratissium	Labiatae	37

8	Bark	Polyalthialongifolia	Annonaceae	38
9	Roots	Tectonagrandis	Verbenaceae	39
10	Seeds	Terminalia chebula	Combretaceae	40

CONCLUSION:

Herbal medicines the most ancient and undisputed mode of treatment not only in india, china but also in many more developed countries. Catheranthus roseus is described in ancient Indian Sanskrit literature the ayurveda. The use of effective for a wide range of diseses. More than 130 alkaloids are present in it, some of which have been commercially sold vincristine and vinblastin are used to treat cancer. You can purchase the catheranthus roseus alkaloids product as vincula for those with diabetes. The ajmalicine alkaloids or C.roseus and serpentin, which can treat cardiovascular disorder, is present in roots. They do not exhibit antibacterial action, according to antimicrobial testing the result obtained for 70 percent concentrated alcoholic plant extracts indicated similar values. For both those made from the steam and leaves of the vinca minor plant. Which the existence of substances with comparable antibacterial activity for extracts. Obtained from the plant materials study. Hence treatment with herbal drugs has effect inprotecting cells and smoothing out fluctuation in glucose level.

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