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ANTI-DIABETIC ACTIVITY OF PLANT:- TRIDAX PROCUMBENS LINN (A REVIEW)

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ABSTRACT:-

According to a study of ancient literature, diabetes was a reasonably common condition that was well-understood in India. Since a long time ago, numerous ailments have been treated with medications made from plants. All living things have access to an abundant supply of medicinally beneficial plants because to the generosity of nature. Some plants' basic qualities have been known for a while, but many others stayed untapped up till now. As a result, it is important to research their applications and carry out pharmacognostic and pharmacological investigations to determine their medicinal characteristics. In actuality, diabetes is a worldwide issue today.

Therefore, the goal of the current study is to create new opportunities for improving the medical applications of Tridax procumbens (Compositae) for the chosen field of diabetes. The field of medicinal plants used to treat diabetes needs to be placed on a firm scientific foundation in order to increase awareness. and increase the resource's worth. In Wistar rats (150–200 g), dried aqueous, alcoholic, and petroleum ether extracts of Tridax procumbens leaves were tested for hypoglycemic action. A digital glucometer was used to measure the blood sugar level. Significantly lower blood sugar levels were achieved by taking leaf extracts orally at doses of 200 mg kg-1. The groundwork has been laid for research into the active ingredients in these anti-diabetic herbs that cause their hypoglycemic effects. Additionally, it supports the conventional wisdom Mandesh region's assertion of Tridax procumbens' anti-diabetic properties.

KEYWORDS:- Hypoglycaemic activity, Tridax procumbens, Glibenclamide, Diabetic mellitus.

INTRODUTION:-

Procumbens Along with Tridax procumbens and T. balbisioides, Tridax Linn is a member of the Compositae family of plants. It is also known as coat button, kansari (Hindi), or ghamara (in local dialect). a medicinal plant Tridax procumbens, sometimes referred to as Coat Button, Kansari (in Hindi), or trilobata, is the other species in the genus. Primarily used in Indian traditional medicine, this plant. It is an annual or perennial weed native to Central America that is present across India, but is especially prevalent in the states of Maharashtra, Madhya Pradesh, and Chhattisgarh. The leaves contain antisecretory, insecticidal, wound-healing, and hypotensive

effects, but the seeds are utilized to reduce bleeding [1.] has a wide range of pharmacological properties, including but not limited to: analgesic, antidiabetic, antioxidant, anti-hepatotoxic, immunomodulatory, anti-inflammatory, antifungal, and anti-microbiological activities.

Since ancient times, this species has been used in Indian Ayurveda. This species has been used to make a variety of goods, including oils, drinks, and skin poultices. The defense mechanism of the plant, secondary metabolites including flavonoids, scientifically proven alkaloids, tannins, carotenoids, and saponins, as well as the presence of these compounds, all contribute to the species' value [2.] The plant's abundant phytochemicals are what trigger the variety of biological reactions. With an emphasis on the in-vivo properties of the phytochemicals and their roles in signaling pathways that can be manipulated for specific pharmacological effects, the objective of this review is to fairly evaluate T. Procumbens as a significant medicinal plant. The goal of this review is to highlight the relevance of this species as a priceless medicinal plant [3]

Classification of Tridax procumbens plant:-

DIVISION	CLASSING
KINGDOM	Plantae–Plants
SUBKINGDOM	Tracheobionta–Vascular plants
DIVISION	Spermatophyta
SUBDIVISION	Magnoliophyta–Flowering plants
CLASS	Magnoliopsida–Dicotyledons
SUBCLASS	Asteridae
ORDER	Asterales
FAMILY	Asteraceae–Aster family
GENUS	Tridax L.–Tridax
SPECIES	Tridax procumbens L.–Coat buttons
CLASSIFICAION	

Medicinal uses:-

Aqueous leaf extract has a cardiovascular impact and considerably lowers blood pressure and heart rate. Similar to aspirin and ibuprofen, lyophilized aqueous leaf extract demonstrated anti-inflammatory activity. Hepatoprotective, antisecretory (antidiarrheal) action is present in all arial sections. It is effective against fungi, bacteria, and protozoa. Leaf juice aids in the healing of open wounds. To examine various types of bleeding, seeds are employed. As an immunomodulator, complete arial portion aqueous extract is employed. Even when put in a mineral basis, dry extract exhibited antibacterial action

In many nations, traditional and complementary medicine is becoming more and more accepted as a comprehensive method of providing healthcare (WHO, 2013). It is possible that people have been using plants as medicine since the Middle Palaeolithic, or about 60,000 years ago. T.procumbens is widespread and has been used to treat a variety of conditions. T. procumbens is used as an antibacterial, antifungal, and antiviral treatment for vaginitis, stomach pain, diarrhea, mucosal inflammations, and skin infections in Central America's

Guatemala. It is also used to treat anemia, colds, inflammation, and hepatopathies. To cure wounds and halt bleeding, apply the leaf juice. According to a study conducted in Chiquimula, Guatemala, nursing pregnant women with anemia can use Tridax to lessen their symptoms. Additionally, this species is employed in the treatment of respiratory and gastrointestinal illnesses,diabetic issues and high blood pressure. The whole plant is used in Guatemala to cure protozoal illnesses like malaria, leishmaniasis, and diarrhea. T. procumbens has powerful anti-plasmodial, antibacterial, and wound-healing capabilities. Its aqueous extracts are effective against chloroquine-resistant P. falciparum parasites. Later, it will be discussed how some of these conventional usage have scientific backing.

Extraction of leaves:-

T. procumbens whole plant powder was placed in the Soxhlet device and extracted with 95 percent ethanol. At roughly 500C, the extraction was done for 72 hours. The extract was further filtered, and the filtrate was then simply distillated to produce a dry bulk. A 6% w/v yield was discovered. Until analysis, the extract was kept in desiccators at room temperature.

Phytochemical screening:-

By using the Libermann-Burchard reaction, Dragendroff's reaction, ferric chloride solution test, Keller-Kiliani test, Shinoda test, and lead acetate test, various constituents including sterols, alkaloids, tannins, glycosides, flavonoids, and saponins/phenolic compounds were screened for in the extract[4-5]

ANTI-DIABETIC ACTIVITY:-

Healthy adult male Wistar rats weighing 180–10 g were employed in the study. The rats were separated into five groups of six animals each.

Group I:- Rat are healthy controls.

Group II: - Diabetes management

Group III:- Glibenclamide (0.25 mg/kg)-treated diabetic rats Diabetes-prone rats

Group IV :-Rats were given a 250 mg/kg ethanolic extract of the entire T. procumbens plant.

Group V:- Diabetes-prone rats received a 500 mg/kg ethanolic extract of the entire T. procumbens plant.

A single intra-peritoneal injection of freshly made STZ 50 mg/kg b.w., followed by 120 mg/kg of nicotimanide in 0.1 M citrate buffer (pH 4.5) in a volume of 0.5 ml/kg b.w.was used to induce diabetes in overnight-fasted rats.[6-7] By testing fasting blood glucose levels 48 hours after STZ injection using a One-Touch Horison glucometer and gluco-strips (Ortho-Clinical Diagnostics, Johnson & Johnson Company, USA), diabetes was identified in the STZ-treated rats. To prevent initial drug-induced hypoglycemia mortality, animals were given 5% w/v of glucose solution (2 ml/kg b.w.) after 24 h after STZ + nicotinamide injection. Diabetic rats were those with fasting blood glucose levels greater than 200 mg/dl[8.]

The diabetic rats were split into groups II through V at random. T. procumbens Linn. (Asteraceae) whole plant ethanolic extract dosages of 250 and 500 mg/kg were chosen from previously published reports[9]. For 21 straight days, the standard (glibenclamide) and investigational medications were given orally through a gavage while suspended in 0.5% w/w carboxymethyl cellulose (CMC). A small amount of blood was drawn from a rat's tail vein on the first, seventh, fourteenth, and twenty-first days. The blood was immediately utilized to measure the blood glucose using a glucometer.[10] Changes in body weight over the course of a week were tracked for every experimental animal. All of the experimental animals had blood samples taken from them at the conclusion of the study using a retro-orbital plexus puncture, and the serum was separated.[11] The estimation of the biochemical parameters was done using the serum.

EFFECT ON BLOOD GLUCOSE LEVEL:-

Dried aqueous, alcoholic, and petroleum ether (60-80°C) extracts of leaves of Tridax procumbens (200 mg/kg) were suspended in 1% bentonite and subjected for hypoglycemic activity in Wistar rats (200-225 g). Diabetes was induced by the intravenous administration of Glibenclamide (0.25 mg/kg) [12-13] aft er anaesthesia with ethyl ether. Forty-eight hours later, the blood (1 mL) was collected from the orbital sinus into tubes and immediately used for the determination of glucose. Only animals with glycaemic readings of 200 mg/dL or more were subjected to the therapies, which involved daily administration. Tridax procumbens leaf extracts for seven days. The oral (via gavage) treatments were administered to all groups at the same time (in the morning) and under the same circumstances. Following the final injection, the blood was drawn once more for glucometer blood glucose measurements.[14-15]

CONCLUSION:-

The complete T. procumbens plant's ethanolic extract has anti-diabetic effects in rats with diabetes mellitus brought on by STZ. Additionally, it has been shown to be successful in treating diabetes mellitus consequences such hyperlipidemia and preventing abnormalities in lipid metabolism. Flavonoids, terpenoids, alkaloids, and glycosides in plants exhibit antioxidant activity and are thought to have anti-diabetic properties. The polyphenolic chemicals and saponin found in plants restrict glucose transfer by blocking sodium glucose co-transporter-1 (S-GLUT-1) in the intestine, whereas flavonoids found in plants restore injured beta cells in the pancreases. An ethanolic extract of the entire plant of T. procumbens may have anti-diabetic properties due to the presence of flavonoids, polyphenolic chemicals, and saponin.

ABBREVATIONS:-

Streptozotocin:- STZ

Carboxymethyl cellulose:- CMC

Sodium glucose co-transporter-1:- (S-GLUT-1)

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