International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 6 Nov - Dec 2024, pp: 678-683 www.ijprajournal.com ISSN: 2456-4494

A Review on phyto pharmacognostic screening of butea monosperma for anti diabetic efficiency

Vidya Vilas Sonune[1], Yashkumar Rameshwar Dhole[2], Dr. Swati P. Deshmukh[3]
Shraddha Institute Of Pharmacy Kondala Zambre Washim-444505
[2]Assistant professor Department of Pharmacology, Shraddha Institute of pharmacy Kondala Zambre, Washim-444505.
[3]Professor of Shraddha institute of pharmacy, Kondala Zamare, Washim-444505

Date of Submission: 25-11-2024 Date of Acceptance: 05-12-2024

ABSTRACT:
Diabetes mellitus is a international grave fitness trouble hard physicians globally. there are numerous factors that play function inside the development of this disorder, including environment, nutrition contamination, genetic predisposition and facet effect of modern capsules. Ayurveda refers to Diabetes mellitus as - Madhumeha many of the Ayurvedic texts Charka, Vagbhata and Madhava have introduced the word Madhumeha into use whilst, naming 20 subtypes of Prameha while Susruta has used the word Ksaudrameha. Madhu, and Ksaudra are actually synonyms of each other. but at a exceptional vicinity, Madhumeha‘ too has been used and Susruta has devoted one complete bankruptcy to the treatment of Madhumeha. He has familiar Madhumeha to be the stage of headaches of Prameha. If only the literal meaning of the phrases is to be seen Madhumeha is the right time period for diabetes mellitus. the chosen drug Palasha (Butea monosperma Linn. Kuntz) possesses Tikta, Kashaya rasa and has Pramehaghna homes and actions, consequently drug appears to be rational for remedy of Madhumeha. Palasha was proved to be beneficial and harmless remedy for Madhumeha. nowadays, it's far a venture for scientists to provide green, safe and reasonably-priced medicines. on this state of affairs, Palasha may be an unique remedy which is widely to be had at some point of united states of america.

Keywords: Butea monosperma, diabetes mellitus, palash,fabiaceae.

I. INTRODUCTION:

Diabetes mellitus (DM) is a metabolic ailment that results in continual hyperglycemia, a pathogenesis condition which can encompass defects in insulin secretion and/or movement (1,2). It’s miles expected that one in 3 americans will broaden diabetes sometime of their lifetime (3). The most not unusual shape of DM is type 2 diabetes mellitus (T2DM), which bills for about 90% of DM cases. T2DM is predominantly because of the failure of the physical tissues to reply to insulin or synthesize sufficient insulin (4,5). Several clinical studies have indicated that diabetes influences the human exceptional of life via causing primary danger factors for negative headaches inclusive of stroke, amputation, kidney failure, and blindness, leading to substantial morbidity and untimely mortality (6,7,8).Diabetes mellitus is a continual metabolic disease that has considerable impact on the fitness, nice of lifestyles and existence expectancy, in addition to on the health care system (9). kind 2 diabetes represents a syndrome with disordered metabolism of carbohydrate; its most prominent scientific characteristic is hyperglycemia. Medicinal flora keep to play an essential position in the treatment of diabetes, specifically in developing international locations in which most of the people have limited resources and do not have an get right of entry to to fashionable remedy. The accelerated call for is also because of the facet consequences related to using insulin and oral hypoglycemic retailers(10). Diabetes mellitus is a complicated metabolic sickness as a result of both insulin insufficiency or insulin disorder. Kind I diabetes (insulin dependent) is caused due to insulin insufficiency because of loss of practical beta cells. Sufferers affected by this are therefore totally dependent on exogenous source of insulin while patients suffering from type II diabetes (insulin impartial) are unable to reply to insulin and may be dealt with with dietary adjustments, exercising and remedy. Type II diabetes is the greater not unusual shape of diabetes constituting ninety% of the diabetic population. Diabetes mellitus is taken from the Greek phrase diabetes, which means siphon – to pass thru and the Latin word mellitus meaning candy. A assessment of the history indicates that the

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 6 Nov - Dec 2024, pp: 678-683 www.ijprajournal.com ISSN: 2456-4494

time period "diabetes" become first utilized by Apollonius of Memphis around 250 to three hundred BC. Ancient Greek, Indian, and Egyptian civilizations found the candy nature of urine on this condition, and for this reason the propagation of the phrase Diabetes Mellitus got here into being. Mering and Minkowski, in 1889, discovered the position of the pancreas in the pathogenesis of diabetes. In 1922 Banting, pleasant, and Collip purified the hormone insulin from the pancreas of cows at the college of Toronto, main to the availability of an effective treatment for diabetes in 1922. Over the years, exquisite paintings has taken area, and a couple of discoveries, in addition to control techniques, were created to address this developing hassle. Regrettably, even these days, diabetes is one of the maximum common chronic diseases inside the u . s . and worldwide (11).

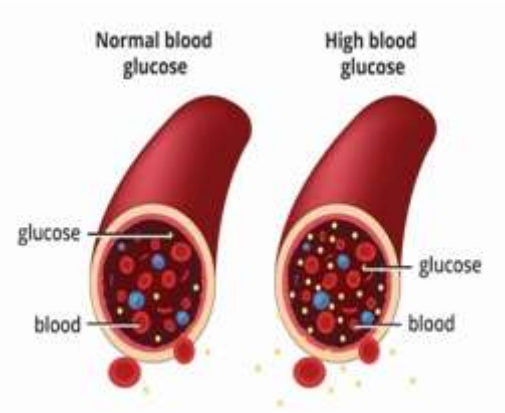

Figure No.-1: Diabetes Mellitus

Epidemiology :
1. It is estimated that 366 million people had DM in 2011; by way of 2030 this would have risen to 552 million.eight The variety of human beings with type 2 DM is increasing in every usa with eighty% of humans with DM living in low- and center-earnings international locations(17).
2. DM triggered 4.6 million deaths in 2011.8 it's far estimated that 439 million humans might have kind 2 DM by means of the 12 months 2030.9 The occurrence of type 2 DM varies extensively from one geographical place to the opposite as a result of environmental and life-style risk factors(18).

Standard treatment for diabetes mellitus
1. sulphonylureas
a) first technology: Tolbutamide, Tolazamide, chlorpropamide.
b) second era: Glibencyamide, Glemiperide.
2. Biguanides: Fenformin, Metformin.
3. Meglitinide analogues: Repaglinide.
4. Thiazolidinedones: Rosiglitazone.
5. α-Glucosidase inhibitor: Acarbose, miglitol (20).

Tolbutamide
Tolbutamide is an oral antihyperglycemic agent used for the remedy of non-
Insulin-based diabetes mellitus (NIDDM).

Pharmacodynamics:
1. Tolbutamide, a primary-generation sulfonylurea antidiabetic agent, is used with diet To lower blood glucose levels in sufferers with diabetes mellitus type II.
2. Tolbutamide is twice as robust as the associated 2d-technology agent glipizide.
3. Tolbutamide lowers blood sugar by means of stimulating the pancreas to secrete insulin And helping the body use insulin efficiently
4. The pancreas need to be able to produce insulin for this drug to work.

Mechanism of action:
1.Sulfonylureas decrease blood glucose in patients with NIDDM via directly Stimulating the intense release of insulin from functioning beta cells of pancreatic Islet tissue through an unknown method that includes a sulfonylurea receptor (receptor 1) at the beta cellular.
2.Sulfonylureas inhibit the ATP-potassium channels on the beta cell membrane And potassium efflux, which leads to depolarization and calcium influx, calcium-Calmodulin binding, kinase activation, and release of insulin-containing granules Through exocytosis, an impact just like that of glucose.

Adverse effects
1. Heartburn, headache, naushea or ommiting
2. stomach ache
3. weight reduction
4. Muscle pain
5. Lower urge for food

Anti-diabetic activity of Butea monosperma (Palash) :
Palash (Butea monosperma Lam. Kuntze) is a typically used herb in Ayurvedic medicinal drug. The genus Butea refers to beautiful appearance of flora. The precise call monospermaApproach 'one seeded and refers to the fruit with a unmarried seed near its apex'. Is normally regarded As Flame of wooded area, belonging to the circle of relatives Fabaceae (12). The literary evaluation of the Palash became

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 6 Nov - Dec 2024, pp: 678-683 www.ijprajournal.com ISSN: 2456-4494

Started right from the Vedas up to latest research works to achieve thorough knowledge of Drug. On comprehensive evaluate of Ayurvedic classics it turned into found that Palash is described in Vedas, Upanisads, Caraka Samhita, Susruta Samhita and both Astanga Sangraha and Astanga Hrdaya. In Caraka Samhita, it is not defined in Mahakasaya. In Susruta Samhita, Palash Is defined in Rodhradi, Muskakadi, Ambasthadi and Nyagrodhadi Gana (13). In Astanga Hrdaya, Vagbhata mentioned Palash in Asanadi gana and like Susruta Samhita, he has Mentioned Palash in Rodhradi, Muskakadi, Ambasthadi and Nyagrodhadi Gana . In Astanga Sangraha, Vagbhata referred to Palash in Asanadi, Rodhradi, Muskakadi, Ambasthadi and Nyagrodhadi Gana (14) . It is defined in other Samhita's like Kasyapa Samhita, Bhela Samhita, Harita Samhita and Sharangadhar Samhita. Palash is also stated in Cikitsagranthas like Cakradutta, Gadanigraha, Bhaishajya Ratnavali and Bhavaprakasha Samhita. Palash is Stated in Nighantu also. The various Nighantus have described the homes of PalashI:e the rasa of Palash is tikta and kasaya, Virya usna however flower of Palash is sita in nature (15). The Fruit is Laghu, usna and used in Prameha, Arsa, Krimi and Vatakaphaja rogas according to Bhavaprakash Nighantu even as in Nighantu Adarsh the rasa of Palash is katu, tikta, Kasaya, virya- usna, vipaka – katu, Doshaghnta- Kaphavatanasaka. The author of Dhanvantari Nighantu mentioned homes Palash Bija as Katu in rasa, Snigdha in guna, Usna viryaAnd kaphanasaka (16).

Butea monosperma (palash plant)

Figure no.-2:Palash Plant

Drug Profile :

Buteamonosperma(Palash)whichbelongsto thefamilyFabaceaegrowswildlyinIndia,Burmaand shrri Lanka. it is able to growing in water logged situations, black cotton soils, saline, alkaline,swampy badly drained soils and on barren lands except in arid areas. Butea monosperma is mostpopularly called 'flame of the wooded area' because of its colorful purple colour flowers . Thetree loses its leaves because the flora expand, in themonth of January till March. it's miles well known astesu, palash.

Scientific Classification :

Nation: Plantae
Division: Magnoliophyta (Spermatophyta)
Magnificence: Magnoliopsida (Dicotyledons)
Order: Fabales (Rosales)
Family: Fabaceae
Genus: Butea
Species: Monosperma.

Pharmacological Activity

1. Ethanolic extract of Butea monosperma flowers substantially reduced blood Glucose, serum cholesterol, stepped forward HDL-cholesterol and expanded the activities Of antioxidant enzymes.
2. In addition, methanolic extract of Butea monosperma plant life confirmed lipid lowering And anti-diabetic hobby in opposition to excessive fat eating regimen and streptozotocin triggered diabetes .
3. The oral management of powder of Butea monosperma culmination at special dosage Significantly decreased blood glucose, urine sugar, total lipids, LDL ldl cholesterol and Improved HDL cholesterol in each regular and diabetic subjects.

Palash Flower

Figure no.-3: Palash Flowers

1. Palas flower is also known as Dhak, Palas, Palash, Flame of The woodland, Bastard Teak, Parrot Tree, Bengal kino.
2. Parasa is known as 'flame of the woodland' due to its red colored vegetation. It's far a Medicinal

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 6 Nov - Dec 2024, pp: 678-683 www.ijprajournal.com ISSN: 2456-4494

tree and its distinctive elements are use to remedy numerous scientific issues.

Characteristics Of Plash Flower

1. Parasa or palash very brilliant plants which are either orange or scarlet in shade.
2. Whilst the tree is in full bloom, the plant life grow in a number of clusters and the look of the tree is then such that it looks like it has been set a flame, as a result, the name.
3. The tree Palas is of medium peak.

Descriptive Morphology :

1. They start appearing inside the month of Feb and maintain on as much as the last Week of April.
2. The scale is sort of 2 to 4 cm in diameter. These visit be densely crowded on Leafless Branching. Plant life are14 cm lengthy.

Chemical Constituents Of Flower

1. Flavonoids
2. Butein,
3. Butrin
4. Isobutrin
5. Isocoreipsin
6. coreipsin,

Leave

Figure no.-4: Palash Leaves

Descriptive Morphology

They have3 foliage, huge and stipulate, 10-15 cm lengthy Petals. Leafs are dull, having No hair above, finely and Conspicuouslycriss-cross veined below with base.

Microscopically Characters

3-foliate, leaflets coraceous, btuse, glabrous above whilst antique, finely silky and Conspicuously reticulately veined under.

Chemical Constituents

1. Glucoside
2. Kino-oil containing
3. Oleic and
4. Linoleic acid
5. Palmitic
6. Lignoceric acid.

Bark

Figure no.-5: Palash Bark

The bark of palash tree enables in expediting wound recovery by way of improving the fee of collagen synthesis and mobile proliferation at the website of contamination.

Chemical Constituents

1. Gallic Acid
2. Palastitrin,
3. Gluycosidesto As Butrin, Alanind, Histidine

.**Seeds**

Figure no.-6: Paash seeds

1. It is called Bastard Teak, Parrot Tree, Butea Monosperma, Butea Gum Tree, Markundi.
2. The seed will germinate within 10-14 days.
3. The satisfactory manner to plant the tree is by way of getting a properly- grown plant From a nursery.

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 6 Nov - Dec 2024, pp: 678-683 www.ijprajournal.com ISSN: 2456-4494

Chemical Constituents
1. Herbal Oil (yellowish-pink)
2. Proteolypolytic enzymes,
3. Protein binding agent and polypeptidase.
(similar to yeast). An acidic compound
4. Palasonins is found in seeds. It also incorporates
5. Monospermoside

II. MATERIALS AND METHODS :

Selection Of Plant/ Drug:

Criteria for choice of plant are primarily based on the above given assessment of literature Primarily based on traditional device of medicinal vegetation.

Collection and authentication of plant:

The plant material became amassed from the regions like medicinal gardens, wooded area , Marketplace and so forthThe required plant element might be separated for different extraneous matter and Subjected to shade drying.

Training of Extract:

The extract of the antidiabetic tablets had been prepare via using specific solvent Structures,inclusive of ethanolic and water solubleextract.Dried Butea monosperma Vegetation have been cleaned and powdered.15g of powdered fabric turned into packed in soxhlet apparatus andextraction changed into Carried out by 250ml of various solvents at the side of few tiny pieces of porcelain And temperature became maintained at 60º C for 24 hours.Preliminary Phytochemical Screening of natural formula:Theherbal formula have been subjected to qualitative tests in order to discover class Of compound like Carbohrates, Proteins, Alkaloids, Glycosides, Tannins, Saponins, Flavanoids constant oils, and so on.

Evaluation test of phytochemical constituents present in palash :

Assessments conducted at the solvent extracts for Phytochemical
Analysis of the additives:
1. Shinoda test =Flavonoids
2. Wagners test =Alkaloids
3. Phenol take a look at
4.Molischtest=Carbohydrate
5.Quinones check
6.Saponin check
7.Glycoside test
8. Tannin check
9..Amino acid check

Drugs :

Palahs flower :

The palas Flower Containing the Flavonoids and which had been determined in methanolic Extract also it's far chargeable for the antidiabetic hobby.
In other handThe palas flower containing Carbohydrate and which were determined in
Both ethanolic and water soluble extract however it isn't chargeable for any forms of
Anti-diabetic hobby.

Palash bark :

1.The palash bark containing the Amino acids which were Found in ethanolicextract but it is less to none active against antidiabetic activity.
2.The palash bark containing the Tannins which were found in both ethanolic Andwater soluble extract and which is responsible for antidiabetic activity.
3.The palash bark containing the glycosides and which were found in ethanolic Extract and it is less but responsible for anti -diabetics activity.

Palash seeds :

The Palas seeds containing Alkaloids and which were observed in each water soluble And methanolicExtract and it's miles answerable for anti-diabetic activity.
The Palas seed containing Oil and Waxes and which have been observed in methanolic Extract and it isn't answerable for any types of anti-diabetic activity.
The Palas Seed containing Di-terpenoids and which have been located in each water Soluble extract and Methanolic extract and it's miles accountable for anti-diabetic Hobby(21,22,23).

III. CONCLUSION :

On typical outcomes and dialogue it become concluded that, Exceptional a part of Palas Plant with unique solvent device, it Was shown that, the plant is more capability anti- diabetic Natural drug.
It will discover the take a look at with pharmacological evaluation And energetic substances separation to discover actual robust Phytochemical that's responsible for anti-diabetic pastime.

REFERENCES:

[1]. Ozougwu, J.C.; Obimba, k.C.; Belonwu, C.D.; Unakalamba, C.B. The pathogenesis and pathophysiology of type 1 and sort 2

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 6 Nov - Dec 2024, pp: 678-683 www.ijprajournal.com ISSN: 2456-4494

diabetes mellitus. J. Physiol. Pathophysiol. 2013, 4 46–57.

[2]. Kim, H.-G. Cognitive dysfunctions in individuals with diabetes mellitus. Yeungnam Univ. J. Med. 2019, 36, 183–191.

[3]. Cheng, Y.J.; Gregg, E.W.; Brinks, R.; Saydah, S.H.; Albright, A.L.; Imperatore, G. 103-OR: exchange in Lifetime chance for Diabetes inside the america, 1997–2015. Diabetes 2020, sixty nine, 103

[4]. Olokoba, A.B.; Obateru, O.A.; Olokoba, L.B. kind 2 Diabetes Mellitus: A review of modern-day trends. Oman Med. J. 2012, 27, 269–273

[5]. Yun, J.-S.; Ko, S.-H. contemporary trends in epidemiology of cardiovascular disorder and cardiovascular chance control in type 2 diabetes. Metab. Clin. Exp. 2021, 123, 154838

[6]. E Garcia, D.; Narvaez-Mendez, M.; Morgan, C.A.; Barajas,; Svarch, A. Biomarkers through The improvement, progression and chronic complications of Diabetes Mellitus: A Mini-assessment. J. Endocrinol. s 2018, five, 1–7.

[7]. Lotfy, M.; Adeghate, J.; Singh, J.; Adeghate, E. persistent headaches of diabetes mellitus: A mini evaluate. Curr. Diabetes Rev. 2016, 13, 3–10.

[8]. Ramtahal, R.; Khan, C.; Hinds, A.; Dhanoo, A..; Lazo, M. prevalence of self-said sleep duration and sleep behavior in type 2 diabetes patients in South Trinidad. J. Epidemiol. Glob. Fitness 2015, five, S35–S43

[9]. Grover J.ok., Yadav S., Vats V. Medicinal vegetation of India with antidiabetic capability. J. Ethnopharmacol. 2002;eighty one:81–one hundred.

[10]. Scartezzini P., Sproni E. evaluate on some plant life of Indian conventional remedy with antioxidant interest. J. Ethnopharmacol. 2000;71:23–43.

[11]. Rajaei E, Jalali MT, Shahrabi S, Asnafi AA, Pezeshki SMS. HLAs in Autoimmune sicknesses: dependable Diagnostic Biomarkers? Curr Rheumatol Rev. 2019;15(four):269-276.

[12]. Klein BE, Klein R, Moss SE, Cruickshanks KJ. Parental history of diabetes in a populace-based examine. Diabetes Care. 1996 Aug;19(8):827-30.

[13]. Somani R, Kasture S, Singhai AK. Antidiabetic capability of Butea monosperma. Fitoterapia. 2006; 2:86-9017.

[14]. Chokchaisiri R, Suaisom C, Sriphota S, Chindaduang A, Chuprajob T, Suksamrarn A. Bioactive flavonoids of the flora of Butea monosperma. Chem Pharm Bull, 2009; four: 428-32

[15]. Azevedo M, Alla S. Diabetes in sub-saharan Africa: kenya, mali, mozambique, Nigeria, South Africa and zambia. Int J Diabetes Dev Ctries 2008. Oct;28(four):one hundred and one-108

[16]. Deore SL, Khadabadi SS, Daulatkar VD, Deokate UA, Farooqui IU. evaluation of hypoglycemic and antidiabetic hobby of bark of Butea monosperma. Pharmacogn mag. 2007;four:one hundred forty–4

[17]. Somani R, Kasture S, Singhai AK. Antidiabetic potential of Butea monosperma in rats. Fitoterapia. 2006;77:86–90.

[18]. Zimmet P, Alberti KG, Shaw J. global and societal implications of the diabetes epidemic. Nature 2001.

[19]. Rajaei E, Jalali MT. HLAs in Autoimmune illnesses: reliable Diagnostic Biomarkers? Curr Rheumatol Rev. 2019;15(4):269-270.

[20]. L.D. Kapoor. manual of Ayurvedic Medicinal plants, herbal Reference Library version (duplicate Press Pvt. Ltd.,India, 2005) pp. 1-86.

[21]. Kumar A, Goel MK. Jain RB, Khanna P,Chaudhary V. India towards diabetes control: Key issues. Australasian Medical Journal;2013(6):524–531.

[22]. Rahimi M. A Review: Anti Diabetic medicinal plants used for diabetes mellitus. Bulletin of environmental, pharmacology and life. sciences;2015(4):163–180.

[23]. Rao MU. Sreenivasulu M, Chengaiah B, Reddy KJ, Chetty CM. Herbal Medicines for Diabetes Mellitus. A Review International Journal of Pharma Tech Research;2010(2):1883– 1892.