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Research Article

Evaluation And Formulation of Antidiabetic Syrup from Butea Monosperma Flower

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ABSTRACT

The flame of the forest is common name for butea monosprma (Palash), a member of the fabaceae family. The different parts of the plant and extract have been utilizing in Unani, homeopathy, and traditional system of medicine since a long year of ago. The flower of B. monosperma contain flavonoid such as butin, butrin, isobutrin, and butein.teh flower of palash show different pharmacological profile like anti-diabetic, anti diarrhoel, anticancer, antioxidant, anti-inflammatory, antifungal, antiulcer etc. the cultivation of this plant generally found in the area of India, shrilanka, Myanmar, south west Himalaya. Considering the beneficial properties of the plant , it can be appreciated as a safe and important herb for humans. Lab scal formulation is made with herbal syrup and evaluated for several parameters like Phm viscosity, density, stability test while evaluating the formula. The different types of ingredient where used in the formulation like sugar free tablet, honey, methyl paraben, viscosity enhancer etc. various instrumentation can be done on the syrup for their evolutionary criteria like HPLC, TLC, Uv absorption, chromatography etc. for the testing for chemical constituent present in the formulation of antidiabetic syrup the various chemical test were performed on it like test for saponin, glycoside, carbohydrate, protein, flavonoid etc. the formulation is prepare by the extract of palash flower. And this extract were extracted from the process of maceration and decoction. In this way the anti diabetic syrup from the flower extract of palash was prepared which is very safe to the diabetic patient. cThe herbal syrup is the very safe medication Having low side effect and contraindication.

INTRODUCTION

Butea monosperma (Lam.) Taub.Syn. *Butea frondosa* Koening ex Roxb. belonging to Family, Fabaceae is a flowering tree. It is known as 'Flame of Forest' in English and '*Palas*' in Hindi language.[1,2]. The flowers possess red colour hence they are called as *Raktapuspa*[3].It is extensively found throughout India, Sri Lanka,

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Myanmar and in North West Himalayas, up to 1500 m altitude, grow at mean annual temperature -4 to 49OC, mean annual rainfall 45 to 450 cm. on wide variety of soil including shallow, gravelly, black, clay loam, saline and waterlogged soil.[4]. Flame of forest (*Palas*) flowers start appearing in February and hold up to end of April.[5] The flowers contain flavonoids butein,butrin and isobutrin.[6] Amino acids isolated from *B. monosperma* flowers include histidine, aspartic acid, alanine and phenylalanine. Other constituents include pyrocatechin, gum, tannins and mucilage.[7] Glycosides isolated from *B. monosperma*flowers include monospermoside and isomonospermoside.[8] The flowers possess antiestrogenic activity, they are astringent to bowls, useful in liver disorder, burning sensation, thirst, gout, skin diseases, tonic, aphrodisiac and diuretic.[9] Various studies have been published that provide findings on various pharmacognostic parameters that can be used for standardization of *Palas* flowers. The Butea monosperma, also known as Palash, is a vibrant and iconic flower native to the Indian subcontinent. It's a small-sized dry-season deciduous tree that grows up to 15 meters tall, with a slow growth rate.[1] Additionally, the fast turnover and decomposition of nutrient rich leaf litter of Butea increases the soil fertility by increasing the soil organic carbon (SOC). Butea forests have ecological and environmental functionsin term of soil erosion control, land rehabilitation, water conservation and soil carbon sequestration . The rapid increase in the rate of deforestation makes Butea an ideal investment or choice for plantation. Biological characteristics and growth habits of Butea make it more important in solving the problem ofdegraded lands, like for erosion control and carbon sequestration. Hence, the present investigation was carried out to study the effect of B. monosperma on the soil quality with the emphasis on its role in eco-restoration of degraded lands so that policy makers may be encouraged to more actively conserve indigenous Butea trees and include Butea in sustainable land management strategies especially for dry tropics.[10].

Fig: - palash flower

The herbal standardization was carried out on the basis of organoleptic properties, physical characteristics, and physico-chemical properties. Physicochemical parameters including ash values, extractive values, loss on drying, foreign matter were evaluated. To investigate the anti-inflammatory effects of Butea monosperma on the induced inflammatory model by evaluating pro inflammatory biomarkers and their computational analysis. Concentrations of inflammatory biomarkers were obtained for the negative control, standard, and various doses of Butea monosperma flower acetone extract. TNF-α estimation was performed using Biospes kit (Chongqing Biospes Co., Ltd, Catalog No. BEK1212). Briefly, the experiment involved setting up a pre-coated plate with standard, test sample, and control wells, each measured in duplicate. Standard wells received 0.1 ml aliquots of standard solutions, while the control well received a diluent buffer. Test sample wells received 0.1 ml of properly diluted samples and underwent incubation at 37°C for 90min. After discarding the plate content, Biotin-conjugated anti-Human TNFα antibody was added, followed by incubation at 37°C for 60 min. The plate underwent washing, and ABC working solution

was added and incubated. After additional washes, TMB substrate was added and incubated at 37°C in the dark. To stop the reaction, Stop solution was added, resulting in a color change. Optical density at 450 nm was read, and relative O.D.450 was calculated. The results of this study can be anticipated as decipher in the search of novel and economically valued drug molecules. Hence, we concluded that acetonic Butea monosperma extract can be subjected as a useful drug in the treatment of inflammation. Butea monosperma (L.) is the reservoir for many potentially active chemical compounds which acts as drugs against various diseases and disorders. Different bioactive substances, such as alkaloids, flavonoids, amino acids, resin, saponin, etc., are present in Butea monosperma . The acetonic flower extract of Butea monosperma showed a significant result in anti-inflammatory activity. Research directions could involve exploring the broader pharmacological profile of Butea monosperma extracts, conducting clinical trials, and investigating potential synergistic effects with conventional anti-inflammatory drugs for enhanced therapeutic outcomes. Bioassay guided fractionation of methanolic extract of *Butea monosperma* flowers was carried out using inhibition of dopamine-induced contraction of rat vas deferens as a biological end point. The antidopaminergic activity was present in the isoflavone isolated from ethyl acetate soluble fraction of methanolic extract. Petals of *B. monosperma* flowers were separated; shade dried and defatted with petroleum ether (60-80°c) by maceration. The marc obtained was dried and extracted with methanol. The methanolic extract (ME, 50 g) was evaporated to dryness in vacuum. The residue was suspended in ethyl acetate, filtered and the filtrate was vacuum dried to provide ethyl acetate soluble (EAS, 10 g). The EAS was fractionated further by preparatory thin layer chromatography using silica gel as stationary phase and benzene: ethyl acetate in the ratio of 4:1 as mobile phase and major bands of compounds were scrapped and dissolved in distilled water to study their effect on rat vas deferens. The fraction which inhibited dopamineinduced contraction of the rat vas deferens was found to be isoflavone (FEAS, weight 700 mg) having Rf of 0.8 and was used in further studies. studied dopaminergic modulation of footshock induced aggression in paired rats using several DA receptor agonists and antagonist and concluded that central dopaminergic system induced a facilitatory modulatory effect on foot shock induced aggression and reduction in central dopaminergic activity resulted in attenuation of aggressive behaviour in rats. Thus the inhibition of foot shock induced aggression by the methanolic extract, its ethyl acetate soluble fraction and the isoflavone indicates its antidopaminergic action. Therefore it is concluded that the isoflavone isolated from *Butea monosperma* has antidopaminergic activity. The results obtained in the present study show that the methanolic extract, its ethyl acetate soluble fraction and the isoflavone (FEAS) potentiated haloperidolinduced catalepsy and inhibited foot shock-induced aggression in rats in a dose dependent manner indicating antidopaminergic activity. Reported existence of postsynaptic DA D2 receptor as an enhancer of contractile response in Vas deferens. Inhibitory effect of the plant flavonoid galangin on rat vas deferens in vitro has been reported Capasso and Mascolo. Inhibition of methanolic extract, its ethyl acetate fraction and the isoflavone suggests antidopaminergic activity at the D2 receptors. This study aimed to highlight the potency of eight crude plant extracts in antioxidants, phenolic content, and AGEs inhibition by using different parameters such as DPPH, ferric reducing powers, nitric oxide, superoxide, Folin Ciocalteu, and BSA-glucose antiglycation methods.

Review of literature

Raju K. Rose et al., (2020):- In this article antidiabetic syrup formulation will be created assessed in this project. It aims that to manage and control blood sugar level in individuals with diabetes.

Sakthibala K.,(2024):- In this research article antidiabetic syrup formulation by using jamun seeds will be created assessed in this project, and detail itroduced about herbal medicines.

Nerkar, A. G. :- from this review the detail about kalmegh plant and their formulation was study. They prepare the herbal syrup from their extract. The plant having various therapeutic activity against various disease that could be help to prevent and treat the disease. The herbal syrup from this plant was prepare by using various ingredients and the extract was prepare by the method of decoction .generally the plant containing various chemical constituents like diterpenoid lactones, flavonoids etc which helps to treat various disease where they brings the various pharmacological activity like antimicrobial antioxidant, anti-inflammatory protozoa, antidiabetic, anti-infective, immune stimulating, hepatoprotective, sex hormone regulation, liver enzyme modulation, cytotoxicity, insecticidal, neuroprotective etc. various evaluation test for the syrup can be performed to give a such a result.

Dwivedi, c. and Daspaul, S.:- The current review focuses on herbal drug preparations and plants used in the treatment of diabetes mellitus, a major crippling disease in the world leading to huge economic losses. Thus many different plants have been used individually or in formulations for treatment of diabetes. The various herbs that are used for the formulation of antidiabetics that all are discuss briefly in this review . the plants that containing the antidiabetic activity are Wattakaka volubilis (L.f.) Stapf. (Asclepiadaceae), Trigonella foenum graecum, Abrus precatorius L, Aloe vera and Aloe barbadensis, Tinospora cordifolia, Mangifera indica, Acacia arabica, Allium sativum, Allium cepa, Azadirachta indica, Momordica charantia. Etc. that all herbs having the various mechanism of action that can be discuss in it .

Saxena,C., Sharma M.:- Studies have look intothe activity of pomegranate extracts in prohibitingheaviness and high levels of fat particle in blood. Here the formulation of antidiabetic syrup by using plant i.e Abelmoschus Esculents, Pomegranates. This study shows that the active compound in Abelmoschus Esculentus is Qucertin and Punica Granatum have Phenolic compound which create good anti-diabetes activity and have a great potential as an antibacterial agent. Both the plant containing antidiabetic activity can be use for making extract to formulate the syrup and performed the phytochemical screening on it. Various in vivo study as well as evaluation parameter can be performed.

Atpadkar, K. D.:- Herbal remedies have been utilized for numerous afflictions. Herbal medicine has numerous dynamic constituents for many infections. The capacity of the polyherbal syrup to keep up a solid body is suspected of coming from the phytochemical substance that acts as an antioxidant. Antioxidants are compounds that can offer assistance boost the safe framework by authoritative to highly receptive atoms. Moringa oleifera, Terminalia arjuna both the plant having various pharmaceutical valued. Based on the results of the consider with physical tests and the combination of Moringa oleifera, Terminalia arjuna was carried out. The definition having antioxidant property thus it will be exceptionally helpful for antioxidant potential of medicinal plant species holds immense promise for preventive and therapeutic applications in cutting edge healthcare.

Patil, S. M. J.:- the formulation and evaluation of herbal syrup by the method of decoction by using the concentration of sugar and also alcohol. The extraction of kiwi is added into orange peel it gives flavored to syrup and basil leaves extract is added as antibacterial agent to inhibit the growth of bacteria and sugar and alcohol used as preservative. By using various excipient the herbal syrup was prepare and their evaluation criteria was performed to make it perfect. The prepared herbal syrup is having anti-oxidant activity. One kiwi fruit contains about 100 mg vitamin C. Clinical data was proved that the platelet aggregation and plasma triglyceride level were reduced after 28 days of fruit consumption. The daily consumption of kiwi fruits is reduced the harm of cancer, especially colon cancer. It also used in treatment of insomnia, to treat sleep disorder. It helps to promote natural sleep. Ali, Z.S., Rahman, K.:- In this study jushanda nazla a decoction formulation was modified into the sugar based liquid dosage formed. The best batches were further evaluated for the physiochemical parameter, microbial and heavy metal contamination. finished product also evaluated for antimicrobial activity against selected microbes. However, developed formulation should be further evaluated for their stability, safety and clinical efficacy. The sugar free liquid dosage form will also be more acceptable for patient with the diabetes or calorie restricted diets.

9.Priyanka, N And Jyothsna K.:- This vinca syrup is formulated using alcoholic preparations and with vinca. This vinca syrup is very easy to formulate and help to overcome many diseased state and patient compliance. This review article deals with formulation of laboratory scale vinca syrup. We have been evaluated various parameters such as PH, viscosity, density, specific gravity, stability of this vinca extract. Vinca alkaloids have been generally included in combination chemotherapy regimes for medicinal therapies. They do not have cross resistance with drugs that alkylate DNA and have a different mechanism of action. Vincristine works by stopping the cancer cells from separating into two new cells so it stops the growth of the cancer.

Fatima. N., Muzaffar,F.:- an herbal Syrup for Cough and Asthma is formulated with selected herbs for proven activities like relieving cough, bronchodilation and anti-inflammatory effect. The herbs included Trigonella foenum-graecum, Curcuma longa, Adhatoda vasicais, Glycyrrhia glabra, Cinnamomum zeylanicum and Honey is utilized for flavor, thickness and expectorant effect. The herbal syrup for relieving asthma and cough is appealing in appearance, proven to be safe after toxicity tests and exhibited significant anti-inflammatory activity in laboratory animals.

10. RSA, S.K., Muthulakshmi, A.:- In the present study, different samples used in traditional medicine were selected for developing poly herbal syrup. The prepared poly herbal syrup was evaluated immediately after preparation and all the tested parameter along with turbidity/homogeneity were compared with the changes in accelerated stability testing. The prepared poly herbal syrup was evaluated immediately after preparation and all the tested parameter along with turbidity/homogeneity were compared with the changes in accelerated stability testing. The final syrup found to have ph 4.5 and specific gravity. Though the primary aim of this work was to develop poly herbal syrup but the stability study will mark an important advancement in the area of phyto-pharmaceuticals.

11. Bhagat, A., And Shrivastava S.:- In this study we prepare cholesterol control herbal syrup by using decoction process of ginger and garlic. Ginger and garlic both lower cholesterol levels by increasing good cholesterol in the body. The

present study helps to develop effective and safe herbal syrup with honey as a base of cough syrup. . The prepared herbal syrup subjected to various evaluation parameters and compared with standard hypolipidemic syrup. Ginger and garlic both are most widely used spices in the Indian kitchen. Both work as best herbal medicines for cancer, cough, antibiotics, anti fungal, anti atherosclerosis disorder, inhibit platelet aggregation and many more. But due to their astringent taste direct consumables is very low. Syrup is for making them easily consumables. It contains ginger, garlic, honey base and alcohol. Quality of final herbal syrup was evaluated by post formulation parameter.

12. Sahu, U.:- This paper has presented various anti-diabetic plants that have been pharmacologically tested and shown to be of some value in treatment of diabetes Mellitus. The effects of these plants may delay the development of diabetic complications and correct the metabolic abnormalities. However, more investigations must be carried out to evaluate the mechanism of action of medicinal plants with antidiabetic effect. This article presents a review on some reported antidiabetic medicinal plants and plant based marketed polyherbal herbal formulations.

13. Nerkar, A.:- The herbal syrup was formulated using extract of Indian Mulberry or Noni as the main ingredient along with invert sugar base. Indian Mulberry or Noni has been used in the treatment of cancer because of many stresses condition and other oxidative reaction in body the free radical is generated by using these, syrup the condition is overcome. Formulation at laboratory scale was done of herbal syrup and evaluated for number of parameters such as PH, viscosity, density, stability testing during evaluation formulation found to be stable .

14. Panda, p.:- As the study shows that the herbal treatment is more beneficial than that of allopathy treatment which uses standard drugs for treatment as Herbal drugs have less or no side effects. . The pre-formulation studies of all three formulations were within specification. Three formulations were prepared and evaluation test such as colour, odor, taste and pH were performed. The present study will help us to understand effectiveness of herbal cough syrup compared to chemical- based syrups. Hereby cough and herbal treatments associated with cough are studied briefly. The herbal cough syrup is studied which is liquid dosage form, it is easy to administer than solid dosage form and is more effective and fast acting in order to cure cough. Method of preparation of cough syrups were discussed.

Aim and Objective:-

Herbal medicines are still widely using for primary health care in so many countries because of cultural acceptability, compatibility with human beings and with lesser side effects. The main objective of the antidiabetic syrup extracted from butea monosperma flower is to give the specific activity to the diabetic patient with less toxicity. The syrup can give with the oral administration which is convinent to all patient and for masking the taste of it some excipient can play an important role which can be included in it .To develop and evaluate the anti diabetic herbal syrup by using extract of butea monosperma flower. The prepared herbal syrup was subjected to various evaluation parameters and compared with that of marketed antidiabetic syrup.

Commercial Introduction of Palash flower

The use of medicinal plants as a source for relief from illness can be traced back over five millennia to written documents of the early civilization in China, India and the Near east, but it is doubtless

an art as old as mankind (1). The use of herbs and medicinal plant as the first medicines is a universal phenomenon. Every culture on the earth, through written or oral tradition, has relied on the vast variety of natural chemistries found in plants for their therapeutic properties. All drugs from the plant are substances with a particular therapeutic action extracted from plants. Butea monosperma (Lam.) is a sacred tree, referred to as a treasurer of the gods, and used in sacrifice related rituals. From its wood, sacred utensils are made. The flowers are offered as in place of blood in sacrifice rituals to goddess Kali. The dry stem pieces are used to make sacred fire. It is an anthropogenic tree of several castes. 'Chakradatta' mentions the use of its gum in external astringent application. The leaves are believed to have astringent, depurate, diuretic and aphrodisiac properties. It promotes diuresis and menstrual flow. The seed is anthelmintic.[19]. The bark is also used in snakebite. When seeds are pounded with lemon juice and applied to the skin the act as a rubefacient. Arab horse dealers put one seed into each feed of corn to keep their horses in condition. The plant is used in ayurvedic, unani and siddha medicine for various ailments. Almost all parts of the plant namely root, leaves, fruit, stem bark, flowers, gum, young branches are used as medicine, food, fiber and for other miscellaneous purpose such as fish poison, dye etc (2, 3, 4). Almost 45 medicinal uses are associated with the plant and out of these claims almost half the number of claims have been scientifically studied and reported. The fresh juice of Butea monosperma is applied to ulcers and for congested and septic sore throats. The gum is a powerful astringent given internally for diarrhea and dysentery. The bark is reported to possess astringent bitter, pungent, alliterative, aphrodisiac and anthelmintic properties. Useful in tumors, bleeding piles and ulcers. The decoction is useful in cold, cough, fever and menstrual disorders. Roots are useful in elephantiasis and in curing night blindness and other eyesight defects. Also cause temporary sterility in women. Also applied in sprue, piles, ulcers, tumors. Leaves have astringent, tonic, diuretic and aphrodisiac properties (5). They are also used to cure boils, pimples and tumors hemorrhoids and piles. Flowers are reported to possess astringent, diuretic, depurative, aphrodisiac and tonic properties. They are used to reduce swellings. Also effective in leprosy, leucorrhea and gout. In 1938, TLC was developed by Ismailoff and Schraiber. An adsorbent is coated on a glass plate which serves as a stationary support on which the mobile phase percolates and develops the chromatogram (6). This method issimple, rapid in separation and sensitive. The speed of separation is fast and it is easy to recover the separated compounds from plate (6). added on this and the fluid was poured on dried flowers of *Butea monosperma* previously weighed. The mixture was then kept for three days in a tightly sealed flask at room temperature protected from sunlight. The mixture was shaken several times daily. The mixture was filtered and filtrate was collected. The extract was concentrated under atmospheric pressure. The extract prepared was then transferred to suitable container and the further experiment work was started. [13].

Biological source of palash flower

Flame of forest flowers are obtained from tree known by botanical name *Butea monosperma* (Lam.) Taub. syn. *Butea frondosa* Koening ex Roxb. belonging to Family, Fabaceae. In Hindi and Marathi languages the tree is known as '*Palas. Butea monosperma,* a deciduous tree belonging to the family Faboideae, is found growing in many parts of India. All the parts of plant are highly medicinal with its mention in different systems of medicine. Several review works have summarized the potential efficiency of this plant. The present

work attempts to evaluate the physicochemical and preliminary phytochemical studies on the flowers of *Butea monosperma* Koen.Roxb, family Fabaceae. The work is done for pharmacognostic standardization and authentication of flowers of *Buteamonosperma.[22].*

Geographical source of palash flower

Flame of forest (*Palas*) tree is extensively found throughout India, Sri Lanka, Myanmar and in North West Himalayas. It is found up to 1500 m altitude, grow at mean annual temperature -4 to 49OC, mean annual rainfall 45 to 450 cm. It grows on a wide variety of soils including shallow, gravelly sites, black cotton soil, clay loams, saline or waterlogged soil. It is medium size tree found in greater part of India, topical and sub topical part of India [west Bengal, Kolkata, Faizabad, Ranchi, Jharkhand, Kerala, Etha etc]. Sub-continent and Southeast Asia ranging across India, Bangladesh, Nepal, Srilanka, Myanmar, Thailand, Cambodia, Vietnam, Malaysia and Western Indonesia.[14].

Chemical constituents of palash flower

Flame of forest (*Palas*) flowers contains flavonoids butein, butin and Isobutrin, isobutyine, 3',4',7- trihydroxyflavone. Fatty acids mainly stearic, palmitic, arachidic and lignoceric acids. Monosaccharides include glucose and fructose. Amino acids include histidine, aspartic acid, alanine and phenylalanine, pyrocatechin, gum, tannins and mucilage [8]. Glycosides monospermoside and isomonospermoside [9].

Cultivation:

Flowering: February-April, Fruiting: May-July. Flower & leaves shed during the dry season. Altitude: Up to 1500 m, Soil type: It grows on a wide variety of soils including shallow, gravelly sites, black cotton soil, clay loams, saline soil.[14].

Characteristics:

- Leaves: Pinnate, with an 8-16 cm petiole and three leaflets, each 10-20 cm long

- Flowers: Bright orange-red, 2.5 cm long, and produced in racemes up to 15 cm long

- Fruit: A pod 15-20 cm long and 4-5 cm broad.[25].

Cultural Significance:

Palash is revered as sacred by Hindus and is prized for its vibrant blooms. It's also associated with the Hindu festival of Holi and is considered a symbol of love and fertility.

Medicinal Properties:

The plant has been mentioned in ancient Ayurvedic manuscripts for its medicinal properties, including anti-diabetic, anti-inflammatory, and antioxidant qualities. The flowers, leaves, seeds, and fruits are used to treat various health anomalies, such as diabetes, hypertension, and digestive issues.[2]

Other Uses:

- The wood is used for making timber, and the resin is used for medicinal purposes

- The leaves are used as a natural dye and for serving food

- The flowers are used to make a traditional Holi color called "Kesari"

Morphology of palash flower

Flame of forest (*Palas*) flowers are rigid racemes, three flowers together form tumid nodes on olive green velvety rachis, calyx is densely brown-velvety and have small bracts and bracteoles small,

calyx have silky hairs within and possess five short teeth. Corolla is 3 to 5cm long, clothed outside with silky, silvery hairs. Petals orange or salmon hued, beaked, articulately veined. The pollen morphological characters helps in the classification of plant taxa and their assessment of their phylogenetic relationship. Morphology of pollen has been categorized into five groups of characters in the order of their phylogenetic importance viz. apertures, exine orientation, exine strata, size and shape. The aperture shows variations in number, position and character, The various combinations of which make a sporomorph(referring to taxa), definite entity. [17].Plant parts were collected and morphological character of fresh and dried *B. monosperma* plant parts i.e. flowers and leaves were observed. Fresh leaves are green in colour while the colour of dried leaves was dull green. The length of both fresh and dried leaves was measured as the length of fresh leaves have an average of 12.8cm while the length of dried leaves was 11.6cm. So the dried leaves shrink in size as compared to the fresh leaves. Moreover the leaves of this plant are compound having three leaflets which have undulate margins, reticulate venation, cuneate base and obtuse apex. Findings of present study are in accordance with flower. The flowers are asymmetric and colour is orange-red while the dried flowers were light orange in colour. The calyx of both fresh flower and dried flower were olive green to brown and velvety from outside. The corolla is 3.8-5cm in length. Present findings are coherent. Qualitative phytochemical analysis of *B. monosperma* confirmed the presence of various phytochemicals like saponins, terpenoids, steroids, alkaloids and tannins. These results are in accordance with Deshmukh *et al.,* 2014. However present study showed no anthraquinones whereas Deshmukh *et al.,* 2014 found anthraquinones too. The methanolic extract of *B.* showed best antifungal activity against tested organisms. No activity was shown by the extracts at 1mg/ml, while at the concentration of 5mg/ml and 20mg/ml *F. solani, C. albican* and *S. cerevisiae* showed the inhibition zones ranging from 5.07±0.66 cm to 10.0±0.26 cm. Methanolic extract was more potent against the tested pathogens at the concentration of 20mg/ml. The results shown by present research are significantly different from Chintan *et al*., 2014. Present research found no zones of inhibition at 1mg/ml concentrations whereas Chintan *et al.,* 2014 showed some zones of inhibition at 1mg/ml concentrations. Present research has shown high zones of inhibition at 20mg/ml concentrations as compared to Chintan *et al.,* 2014.[18].

Microscopy of palash flower

The microscopic evaluation of the powdered plant material (Flower, Leaf and Stem) was carried out with the help of microscope. The plant material was soaked in a solution of 20% chloral hydrate and then mounted on a glass slide with the help of glycerine. The mounted slides were then observed under a photographic microscope with a magnification of 400X. The powder microscopy of all the three plant parts revealed peculiar characteristics. The flower powder of *B.monosperma* showed the presence of trichomes, which were unbranched and unicellular in nature having a narrow lumen. Single layer epidermal cells and parts of cuticle were also observed. Microscopy of the leaf powder showed cells of the upper epidermis, unicellular trichomes, which tapered towards the ends and annular vessels. The stem powder under the microscope shows traces of parenchymatous cells, phloem fibres and outer cork cells35.[15].

Pedicel: Shows more or less wavy outline, single layered epidermis covered with thick cuticle, unicellular, 2 or 3 celled trichomes, followed by ground tissue consisting of 6 to 8 celled, thin-

walled, oval to polygonal parenchymatous cells; endodermis single layered; vascular bundle radially arranged, collateral, consisting of usual elements.

Sepal: Shows single layered epidermal cells, uniseriate, multicellular trichomes and club shaped secretory ducts present on lower surface, epidermis followed by 3 or 4 layered, thin-walled, loosely arranged parenchymatous cells on both surfaces, thin walled, wavy epidermal cells showing on the surface view.

Petal: Shows single layered, thin-walled, epidermal cells, covered with numerous, unicellular, pointed trichomes and a few glandular hairs; thin-walled, capitate or cone shaped papillae present on both surface; mesophyll consisting of thin walled, loosely arranged, parenchymatous cells; a large number of larger and smaller vein found scattered in this region, some of the cells contain a few of oil globules.

Powder: Yellowish-brown; shows fragments of parenchyma, epidermis withstomatal cells; numerous, pointed, multicellular trichomes and a few oil globules.[16].

Physiochemical parameters of Palash flower

Physical and Chemical identity, chromatography, ash value, extractive value, moisture contents, loss on drying. Pharmacological parameter, biological activity profiles, bitterness value. Toxicity details:-pesticide residue, heavy metals, microbial contamination.The need for standardization-Producers' and consumer' perspective in the global perspective, there is a shift towards the use of medicine of herbal origin, as the dangers and the shortcoming of modern medicine are getting more apparent. It is the cardinal responsibility of the regulatory authorities to ensure that consumers get the medication, which guarantees purity, safety, potency, and efficacy. The regulatory authorities rigidly follow various standard of quality prescribed for raw material and finished products in pharmacopoeias, formularies and manufacturing operation through statutory imposed good manufacturing practices. These procedures logically wound apply to all type of medication whether includes in modern system in medication or one of the traditional system. Though herbal product have become increasingly popular throughout the world ,one of impediments it is acceptance is the lack of standard quality control profile, the quality of herbal medicine that is, the profile of the constituents in the final product has implication in the efficacy and safety. However, due to the complex nature and inherent variability of the constituents of plant-based drug, it is difficult to stabilize quality control parameter though modern analytical technique are expected to help in circumventing this problem. Hence for herbal drug and products, standardization should encompass the entire field to study from cultivation of medicinal plant to its clinical application.[19].

A. Determination of Total Ash –

The residue remaining after incineration is the ash content of drugs, which simply represents inorganic salts, naturally occurring in drugs or adhering added to it as form adulteration.

Two types ash determine-

1) Acid insoluble ash value.

2) Determination of water soluble ash

B. Determination of Extractive Value

1) Determination of alcohol soluble extractive.
2) Determination of water-soluble extractive.

C. Determination of moisture content:

Weighed 10 gm. of drug and taken in a taken evaporating dish. Then it is dried 105°C for 3 hours and again weighed. Drying and weighing was continued at one hour interval until difference two successive weighing corresponds to not more than 0.25 %. The reading is taken after a constant weight is reached and the moisture content is determined.

D. Determination of pH:

The pH value of an aqueous liquid may be defined as the common-logarithm of the hydrogen ion concentration expressed in grams. Potentiometrically pH value determine by a glass electrode and a suitable pH meter.

(a) Ash Value

1) Use to determine quality and purity of drug.

2) Ash contains in organic radical like phosphates, carbonates and silicates of Sodium, Potassium, Magnesium and Calcium etc.

3) Sometimes inorganic variables like calcium oxalate, silica, carbonate content of the crude drug effects, total Ash value. Such variables are then by treated with acid and acid insoluble Ash value is determined.

Procedure

1) Weigh the silica crucible.

2) Powdered drug is weighed and put in to the crucible.

3) Then it is placed in the Muffle furnace at 4500c for about 1/2 - 1 hour. (i.e.: untill all carbon particles get burnt off.)

4) Cool it in dessicator

5) Then weigh the ash and calcutale the percentage of total ash with reference to the air dried sample of the crude drug. (Standard ash value of "Palash" flower is not more than 7%).

Calculation of Total Ash Value

Weigh of the empty dish= 16.98gm
Weigh of the drug taken=3gm
Weigh of the dish+ Ash (after complete incineration) =19.98gm
Weigh of Ash=0.21gm
Therefore,100g the crude drug gives= 0.21/3×100
Total Ash value = 7%

Determination of Extractive Values

1) Useful for the evaluation of crude drug.

2) Give idea about the nature of chemical constituent present in a crude drug.

3) Useful for the estimation of specific constituent soluble in that particular solvent used for extraction.

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Determination of water soluble extractive value [20]

- About 5gm of air dried sample transferred into a 250ml conical flask
- The flask was well shaken and allowed to stand for 10 min.
- Filtered was transferred to china dish, the solvent was evaporatedon [;/lo,water bath
- Allowed to dry for 30 min. then dried in an hot air oven. Residue was weighed.
- Percentage of water-soluble extractives was calculated with reference to the air dried drug.

Procedure

Extraction Method

1) Required amount of the drug powder is taken in a conical flask.
2) Pour some water (required amount of water) in a certain ratio.
3) Close the mouth of the conical flask with a filter paper and silver foil.
4) Shake it vigorously with frequently intervals.
5) Then place the conical flask in a warm place for 7 days with frequent vigorous shakings.
6) After filter the content and the filtrate is dried and the liquid part is kept on a water bath and evaporated.
7) It is evaporated till the required concentrate is achieved.
8) And stored in a dry container.

Preliminary phytochemical evaluation

Alkaloids are the natural product that contains heterocyclic nitrogen atoms, are basic in character.Alkaloids are naturally synthesed by organisms, including animals, plants, bacteria and fungi. Alkaloids are significant for the protecting and survival of plant because they ensure their survival against micro-organisms, insects and herbivores and also against other plants by means of allelopathically active chemicals (Molyneux, *et. al*., 1996). The use of alkaloids containing plants as dyes, spices, drugs or poisons. Some alkaloids have stimulant property as caffeine and nicotine, morphine are used as the analgesic and quinine as the antimalarial drug.Tannins are a heterogeneous group of high molecular weight polyphenolic compounds with the capacity to form reversible and irreversible complexes with proteins, polysaccharides, alkaloids, nucleic acids and minerals, etc. Flavonoids are polyphenolic compounds that are ubiquitous in nature. Flavonoids occur in some vegetables, fruits and beverages like tea, coffee and fruit drinks (Pridham, 1960). Flavonoids have been reported multiple biological properties including antimicrobial, cytotoxicity, anti-inflammatory as well as antitumor activities but the best described property is their capacity to act as powerful antioxidants which can protect the human body from free radicals and reactive oxygen species. Flavonoids contain anti-inflammatory activity, enzyme inhibition, antimicrobial activity, estrogenic activity, anti-allergic activity, antioxidant activity.

Extraction

Crude plant extract was made ready by means of Soxhlet extraction techniques. About 20 gm of powdered plant material was equally packed into a thimble and extracted with 250 ml of various solvents one by one. Solvents used were methanol and ethanol as per increasing polarity. The process of extraction continues for 24 hours or till the solvent in siphon tube of an extractor emerges as colourless. After that the extract was taken in a beaker and kept on a hot plate and heated at 30-40ºC till all the solvent got evaporated. Dried extract was kept in the refrigerator at 4ºC for their future use in phytochemical evaluation.[15].

Preliminary phytochemical screening

The preliminary phytochemical analysis for flower of *Butea monosperma* (Lam.) Kuntze. was carried out using standard methods (Sofowra, 1993; Trease and Evans, 1989; Kokate, 2014 and Harborne, 1973). Phenols screenedusingferric chloride test,alkaloids using wagner's reagent, flavonoids using shinoda test, anthraquinone using borntrager's test, anthocyanin using hydrochloric acid test. saponins using foam test, lycopene using shinoda's test, fat and oil using spot test, xanthophylls and β Carotene by HPLC, and carotenoids as perA (Jayi *et al.,* 2011) Results obtained for qualitative screening of phytochemicals in the flower of *Butea monosperma* (Lam.) Kuntze was revealed that the eleven phytochemicals screened for, nine were found present in various solvent extracts. They are phenol, alkaloid, flavonoid, anthocyanin, xanthophyll, saponins, β- carotene, lycopene and total carotenoids. The methanolic flower extract showed presence of phenols, alkaloids, flavonoids, anthocyanin, xanthophyll, saponin, β-carotene, lycopene and total carotenoid, whereas, ethanolic extract showed presence of phenol, alkaloid, flavonoid, xanthophyll, saponins, β-carotene, lycopene and total carotenoids. This shows that the plant part offers a much broader array of phytochemicals. Phytochemical analysis of plant was need to discover and extend to novel therapeutically agents with improved efficiency. The medicinal value of flowers lies in some chemical substances that have a certain physiological activity on the human. Different phytochemicals had been established to have an extensive variety of activities, which may also help in protection against persistent sicknesses. Alkaloids defend against prolonged ailments. Saponins protect in opposition to hypercholesterolemia and antibiotic things (Hait *et al.,* 2019). Phytochemicals in greenery food had great deals of attraction. Mainly on their role in preventing diseases caused and the result of oxidative stress, and release reactive oxygen species has single oxygen of various radicals as a damaging side effect of aerobic metabolism (Thilagavathi *et al.,* 2015).[42].

Chemical test of palash flower

(Kulkarni Dr. Manjiri, 2007-08, Khandelwal. Dr. K. R,2004, Kokate. C. K,. Purohit at.el.2004)

Test for Triterpenoids

a) Salkowski test: Few drops of concentrated sulphuric acid was added to the test solution of the extract, shaken and on standing lower layer turns golden yellow.

b) Liebermann Burchard Test : To the test solution of the extract, few drops of acetic anhydride was added and mixed well. Then 1 ml of concentrated sulphuric acid was added from the sides of the test tube, a red colour is produced in the lower layer indicate Triterpenes.

Tests for Glycosides

a) Baljet's test: The test solution treated with sodium picrate gives yellow to orange colour.

Tests for Saponins

Foam test: Test solution and shaken shows the formation of foam, which is stable an least for 15 mins.

Tests for Carbohydrates

a) Molisch's test: Test solution with few drops of Molisch's reagent and 2ml of

concentration H2SO4 added slowly from the sides of the test tube shows a purple ring at the junction of 2 liquids.

b) Benedict's test: The test solution treated with Benedict's reagent and

boiling on water bath shows reddish brown precipitate.

c) Fehling's test: The test solution when heated with equal volume Fehling's A

and B solutions, gives orange red precipitate presence of reducing suga

Tests for Alkaloids

(a) Mayer's test: Test solution with Mayer's reagent (Potassium Mercuric iodide) gives cream coloured precipitate.

Tests for Flavonoids

(a) Shinoda test : Test solution with few fragments of magnesium ribbon and

conc. HCL shows pink to magenta red colour.

(b) Zn/HCL reducing test : Test solution with Zinc dust and few drops HCL shows magenta red colour.

Tests for Proteins

a) Millon's test: Test solution when treated with Millon's reagent and heated on a water bath, Protein is stained red on warming.

b) Xanthoproteic test: Test solution treated with conc. HNO3 and boiled gives yellow precipitate.

c) Biuret test: Test solution treated with 40% NaOH and dilutes CuSO4solution gives blue colour.[15].

Pharmacological profile of palash flower:

Antidiabetic activity:

The ethanolic extract of B. monosperma flower has a antidiabetic activities against alloxan-induced diabetic Wistar rats .The daily treatment of alloxan instigate diabetic animals with 50% ethanolic extract of B.monosperma flowers (BMEE) forcontinuously 45 days decreased the blood glucose level therefore, preventing steep onset of hyperglycemia which was inspected after alloxan administration and maintained body weight and value of blood glucose level observed in normal control andglibenclamide-treated diabetic mice. The level of serum (cholesterol) triglyceride, low-density lipoprotein and very low-density lipoprotein cholesterol were also decreased the antidiabetic potential of BMEE. The phytochemical analysis of the ethanolic extract proved the presence of flavonoids, saponins and sterols which are potent antihyperglycemic and anti-oxidative agents .Anti-inflammatory and anti oxidant activity.[9].

Medicinal value: -

Butea monosperma is a cynosure of contemporary medicine and is utilised in Ayurveda, Unani and homoeopathic treatments. This genus' plants are well recognised for their pigmentation and they are planted as an ornamental because of its sulphur-coloured flower. It is commonly used in asntonic, astringent, aphrodisiac and diuretics. Their seeds act as an inflammation and it is helpful in the treatment of tumours, intestinal worms, bleeding piles, urinary stones, skin and eye conditions, and gastrointestinal problems. Rubefacient properties are exhibited by seeds when mashed with lemon juice and applied on the skin. Flowers are use in the treatment of liver disorders. In India farmers use this plant to stabalized the field bunds. Root shows analgesic, aphrodisiac and antifertility activities which are useful in filariasis, piles, night blindness, ulcer, helminthiasis and tumours. Bark fibre is employed in the production of paper,

cordage, and caulk for boat seams. Although leaves are high in nutrients and can be utilised as a moderate fuel, their limited digestibility makes them just slightly more digestible than straws. The wood is burned to make gunpowder .[9].

Traditional Uses:

Roots of Butea monosperma is used to treat night blindness and elephanthiasis. Leaves are used in the treatment of eye disease, it is an effective astringent, antibacterial, and used to cure pimples . Bark or stem has antifungel properties and they are use in case of bone fractures, to treat the disease of anus, dysentery, hydrocele, piles, cure ulcer and tumours. Flowers shows antiestrogenic activity, theyare sweet, bitter, acrid, astringent to bowls, increase "Vata" and decrease "Kapha", it is useful in liver disorder, burning sensetaion, thurst, gout and skin diseases. Gum of this tree is anthelmintic, used in throat infection, diarrhoea and dysentery. Fruits can be useful in diseases related to urine, piles, worms and abdomen Seed shows anthelmintic and laxative activity .(9)

Phytochemical Constituents:

Phytochemicals had great deals of attraction in greenery food. It plays role in preventing diseases, causes and oxidative stress release the reactive oxygen species which contains single oxygen of various radicals as a damaging side effect of aerobic metabolism . Phytochemical analysis of plant is required to improve the therapeutical efficiency. Some parts of plant have medicinal value which contain chemical substances and they show some physiological activities on the human .[20].

Standardization Parameter

This involves adjusting the herbal drug preparation to defined contents of a constituents or a group of substances with known therapeutic activity by adding excipient or by mixing herbal drugs or herbal drug preparations. Botanical extracts made directly from crude plant material show substantial variation in composition, quality, and therapeutic effects. Standardized extracts are high quality extract containing consistent levels of specified compound, and they are subjected to rigorous quality controls during all phase of the growing, harvesting, and manufacturing processes.The term "standardization'' may mean many different things. Some manufacturers use the term standardization incorrectly to refer to uniform manufacturing practices, but following a recipe is not sufficient for a product to be called standardised. There are two types standardization. In the first category, true standardization, a definite phytochemicals or group of constituents is known to have activity. The other type of standardization is based on the guarantee of the manufacturers for the presence of certain percentage of marker compounds which are not indicators of therapeutic activity or quality of the plants.[20].

Herbal Syrup

Herbal syrup is defined as the prepared and combination and concentration of decoction with honey sugar or either sometimes use alcohol.The base of such syrup is a strong herbal decoction and mixing a decoction with sugar honey help to thicken preserves the decoction 1. Herbal plant and formulation are used for many types of disease like cough syrup and other disease. The cough syrup many types of herbal pl Herbal syrups are sweet, viscous liquids made from herbs, plants, or botanicals. They're often used as natural remedies, flavorings, or sweeteners.[21].

Benefits:

1. Natural and organic: Herbal syrups are made from natural ingredients, making them a popular choice for those seeking organic or non-GMO products.

2. Health benefits: Certain herbs and plants used in syrups have medicinal properties, such as anti-inflammatory, antioxidant, or antimicrobial effects.

3. Flavor and aroma: Herbal syrups can add unique, complex flavors and aromas to foods, beverages, and desserts.

4. Versatile: Herbal syrups can be used in various ways, such as a topping for pancakes or ice cream, a mixer for cocktails, or an ingredient in baked goods. ant are used for pudina, Tulsi, Cinnamon, honey in that whole plant are used for making herbal medicine the many years. Herbal formulation a most commonly used a development as well as developing countries as health care.

Types of Herbal Syrups

1. Floral syrups: Made from flowers like rose, lavender, or hibiscus, these syrups are often used in desserts and drinks.

2. Spiced syrups: Infused with spices like cinnamon, ginger, or nutmeg, these syrups add warmth and depth to beverages and baked goods.

3. Fruit-based syrups: Made from fruits like berries, citrus, or apples, these syrups are perfect for topping pancakes, waffles, or ice cream.

4. Medicinal syrups: Formulated with herbs like echinacea, peppermint, or chamomile, these syrups are used to support health and wellness.[23].

Precautions and Contraindications

1. Allergies and sensitivities: Some herbs or plants used in syrups can cause allergic reactions or interact with medications.

2. Pregnancy and breastfeeding: Certain herbs or plants may not be suitable for pregnant or breastfeeding women.

3. Interactions with medications: Herbal syrups can interact with prescription medications, such as blood thinners or diabetes medications.[24].

Shelf Life and Storage

1. Refrigerate: Store herbal syrups in the refrigerator to slow down spoilage and extend shelf life.

2. Dark glass bottles: Use dark glass bottles to protect the syrup from light and preserve its flavor and aroma.

3. Label and date: Label the bottle with the date, ingredients, and any relevant instructions.

Advantages of herbal syrup

-No side effects

-No Harmless

- Easily available

-Easy to adjust the dose for child's weight

-No nursing is required, which main and the patient can take it with no help.

-The liquid dosage form is executed for products like cough medicines.

-Herbs Grow in common place.

-Antioxidant by retarding the oxidation as sugar is Hydrolyzed in to cellulose and dextrose.

-Good patient compliance especially pediatric patients as syrup are sweet in test.

-It is a preservative by retarding the growth of bacteria, fungi and mould as osmotic pressure.[22].

Disadvantages of herbal syrup

-Sedimentation of solid occasionally gives foot from of product.

-Dose precision cannot be achieved unless suspension suspensions are packed in unit dosage forms.

-Same microbial contamination take place it preservation not added in accurate proportion.

-Also herbal medicine having another disadvantage is the risk of self dosing of herbs which is very rare.

-Fluctuation in storage temperature may cause crystallization of sucrose from saturated syrup. [22].

Diabetes: -

Herbal medicine are treated as traditional medicines since they were extensively used in traditional system of medicine like Ayurveda, Siddha, Unani. Plants have been the basic for medicinal treatment through much of human history and such traditional medicine is still widely practiced today for many diseases and used to treat effectively one of most common and oldest metabolic disorder "DIABETES around 250 BC across the world many people were suffering from the diabetes. [28]. "Diabetes Mellitus" **i**s a chronic metabolic disorder where the blood glucose levels are increased [increased sugar levels]

The increased blood sugar levels are termed as "hyperglycemia"

The decreased blood sugar levels are termed as "hypoglycemia"

The Diabetes mellitus mainly occurs due to

i) Insulin deficiency [insulin dependent diabetes mellitus]

ii) Insulin resistance [non insulin dependent diabetes mellitus] [32].

The most common symptoms of diabetes mellitus

- Frequent urination [polyuria]
- Increased thirst [polydipsia]
- Excessive hunger [polyphagia]
- Weight loss
- Blurred vision
- Slow healing of cuts and wounds

Diabetes mellitus is a group of metabolic disorders characterized by high blood sugar levels, which can lead to various complications if left untreated or poorly managed.[32].

Types of Diabetes

1. Type 1 Diabetes: An autoimmune disease in which the body's immune system attacks and destroys the insulin-producing beta cells in the pancreas.

2. Type 2 Diabetes: A metabolic disorder characterized by insulin resistance and impaired insulin secretion.

3. Gestational Diabetes: A type of diabetes that develops during pregnancy, usually in the second or third trimester.

4. LADA (Latent Autoimmune Diabetes in Adults): A form of type 1 diabetes that develops in adults.

5. MODY (Maturity-Onset Diabetes of the Young): A rare form of diabetes caused by genetic mutations.[29].

Symptoms

1. Increased thirst and hunger
2. Frequent urination
3. Fatigue
4. Blurred vision
5. Slow healing of cuts and wounds
6. Tingling or numbness in hands and feet[38].

Risk Factors

1. Family history
2. Obesity
3. Physical inactivity
4. Age (45 or older)
5. Ethnicity (certain ethnic groups are more prone to developing diabetes)
6. History of gestational diabetes or delivering a baby over 9 pounds.[35].

Complications

1. Heart disease and stroke
2. Kidney disease (nephropathy)
3. Nerve damage (neuropathy)
4. Blindness (retinopathy)
5. Foot damage (ulcers, infections, and amputations)
6. Cognitive impairment and dementia[31].

Management

1. Medications (oral hypoglycemic agents, insulin)
2. Lifestyle modifications (diet, exercise, weight management)
3. Monitoring blood sugar levels
4. Regular health check-ups

Prevention

1. Maintain a healthy weight
2. Engage in regular physical activity
3. Eat a balanced diet
4. Avoid tobacco and limit alcohol consumption
5. Get enough sleep[36].

Ingredients use in the formulation of syrup

1. *Butea Monosperma flower*.(Palas).

Butea monosperma flowers, along with other parts of the plants, possess potential anti diabetic properties ,including hypoglycemic effects and the ability to increase glucose uptake.The active components of butea monosperma flowers indicates the extract from butea monosperma can reduce blood glucose levels.

2. Propylene glycol

It is commonly used “drug stabilizer in topical, oral and inject able medication. It is regarded as safe.

3. Methyl paraben

Methyl paraben is well known for its preservatives action and used mostly in cosmetics food and pharmaceutical industry.

4. Peppermint oil

It is used as pure natural essential oil and it is used as flavouring agent and powerful minty flavor and used in aromatherapy and has refreshing properties

5. Sugarfree tablet

Sugar free tablets are sweetners that provide sweetness without adding calories ar significantly affecting blood sugar levels.

6. Honey

Honey is a natural sweetner in food and beverages to a soothing agent for cough and wound healing.

15. Materials and methodology-

1. **Plant Material**:-

-Butea monosperma flowers

2. **Excipient**: -

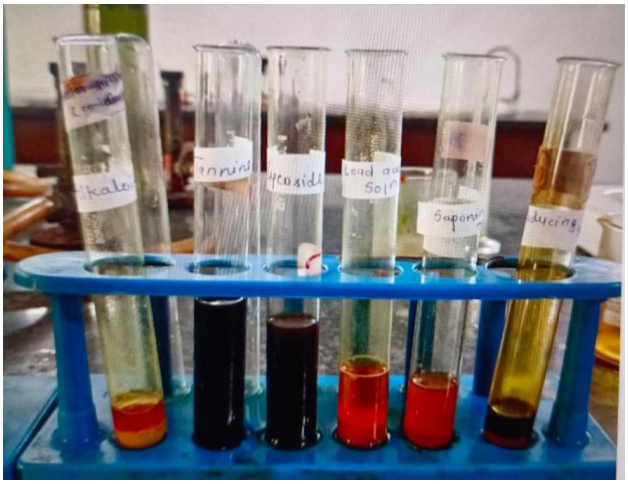
-propylene glycol
-methylparaben
-sugarfree tablet
-honey
-pipperment oil

3. Instrument used

-weighing balance
-PH paper
-ostwald viscometer
-density bottle
-Glassrod

Chemical test:

SR no.	Test	Procedure	Observation	Result
1.	**Alkaloid**			
	a) Mayers reagent	A solution of mayers reagent (Potassium mercuric Iodide) is added to the extract.	A creamy white precipitate indicates the presence of Alkaloids.	+Positive
	b)Dragondroff reagent	A solution of Dragondroffs regent (Pottasium bismuth iodide) is added to the extract.	A reddish brown precipitate indicates the presence of alkaloids.	+positive
2.	**Glycoside**			
	a) Molisch's Test	A few drops of Molisch's reagent(alpha napthol) are added to the extract.	A purple or reddish voilet colour indicates the presence of glycosides.	+positive
3.	**Tannins**	1ml of extract added o.1% of ferric chloride solution and observed.	Brownish green or a blue-black coloration which indicates the presence of tannins.	+positive
	a)Lead Acetate Solution	A few drops of 1%blead acetate solution are added in the extract.	A yellowish white precipitate indicates the presence of tannins.	+positive
4.	**Saponin**			
	a)foam test	A small amount of extract is mixed with water and shaken vigorously.	The formation of stable foam inicates the presence of saponin.	-negative
5.	**Reducing sugar**			
	a) Fehling's test	A few drop of Fehling's solution (copper sulfate and sodium hydroxide) are added to the extrac.	A brick red precipitate indicates the presence of reducing sugars.	+positive



Experimental work:

Extraction Method

Preparation of herbal extract

Collect and wash the flowers with clean water.

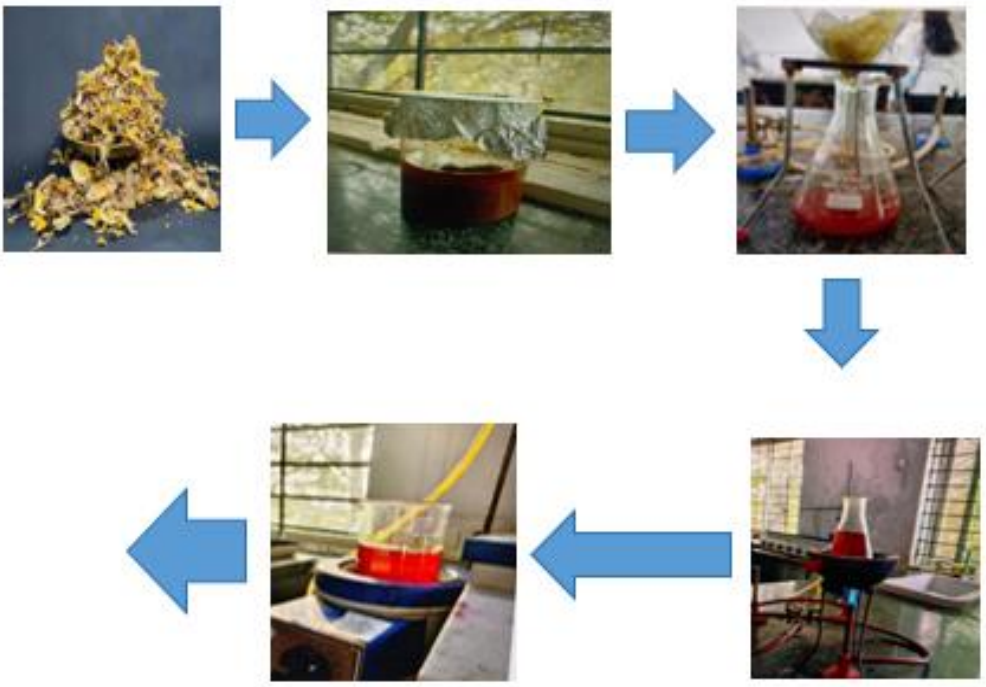
Dry the flowers and grind the flower into fine powder

Take 100gm of powder and add 350ml of 90%ethanol for 3hrs.

Transfer the mixture into percolator and add 150ml of 90%ethanol and let it sit for 7 days with occasionally stirring

Collect the liquid extract and remove ethanol by heating or evaporation leaving a dark orange residue.

Store the extract in cool and, dark place to presence its quality.



Evaluation Test:

Physical Appearance:

Characteristic	Result
Colour	Orange, Red
Odour	Aromatic
taste	Sweet
Appearance	Liquid

solubility test	Water-soluble Ethanol-soluble
PH	Acidic 1.3 range
Viscosity	0.3754 poise
Density	1.3665

Density= Mass /volume

D=m/v
Weight of empty bottle-10.82g
fill bottle-65.48g
65.48-10.82
54.66 mass
54.66/40
density=1.3665

Viscosity=

viscosity of syrup
Flow time of water
Flow time of syrup
weight of density bottle -3.175
weight of density bottle +water=10.287gm
weight of density bottle +syrup=65.48
mass of water=10.287-3.175
= 7.112
mass of liquid (syrup)= 65.48-3.175
=62.31
viscosity(nl)=ml/vl×t1
mw/vw×tw×nw(coefficient of viscosity 0.01 poise)
=62.31×30
=7.112×7 ×0.01
=869.3
49.784×0.01
=37.54820×0.01
=0.3754poise

Viscosity:

Thoroughly clean the Ostwald viscometer with warm chromic acid and if necessary used

1. An organic solvent such as acetone.

2. Mount viscometer in vertical position on a suitable stand.

3. Fill water in dry viscometer up to mark G.

4. Count time required, in second for water to flow from mark A to mark B.

5. Repeat step 3 at least 3 times to obtained accurate reading.

6. Rinse viscometer with test liquid and then fill it up to mark A, find out the time required

for liquid to flow to mark B.

7. Determination of densities of liquid as mentioned in density determination experiment.

Formula for viscosity:

Density of test liquid × Time required to flow test liquid

Viscosity = × Viscosity of water

Density of water × Time required to flow water .[39].

Figure: Viscosity

PH :- The pH determination of syrup by using to techniques.

A)Glass electrode. B) pH paper.

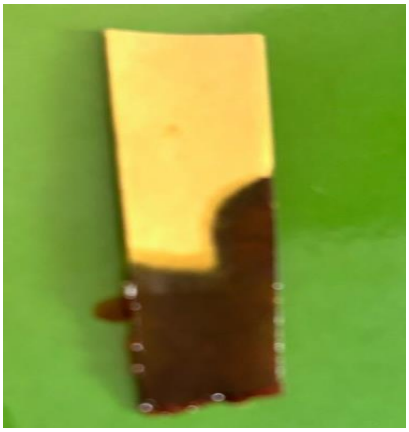
Procedure for glass electrode:

1. Prepare 30ml buffer of each pH. The volume of the stock solution to be taken. Prepare

the buffer by mixing appropriate Volume.

2. Allow the solution for 15minutes to establish equilibrium.

3. Measure the pH of solution using a pH meter. Solutions: Stock solution: Acetic acid 0.2molar: Dissolve 1.2ml of glacial acetic acid in 100ml of distilled water in a volumetric flask. Molecular weight of glacial acetic acid is 60.605; weight per ml is 1.050. Buffer solution: Dissolve 10.21 gram of potassium hydrogen phthalate in sufficient Carbon dioxide free water to produce 1000ml.[38].



PH: -Acidic

Instrumental analysis of palash flower

TLC: A method is given to detect butrin and isobutrin in *B. monosperma* flower extract. In the method, test solution was prepared by using ethanol extract of *B. monosperma* flowers, silica gel - G plate was used as stationary phase, toluene : ethyl acetate (9:1 v/v) was used as mobile phase, vanillin-sulphuric acid reagent was used for detection of spots, spots of butrin and isobutrin were observed at Rf 0.31 and 0.65 respectively [41]. Slurry of silica gel G was prepared in distilled water and poured over a glass plate to form a thin layer. The prepared plates were air dried for setting and then kept in an oven at 100-120°C (30min) for activation. The extracts were dissolved in respective solvents and spotted over an activated plate (1cm above from the bottom). The spotted plates were kept in a previously saturated developing chamber containing mobile phase, and allowed to run 3/4th of the height of the prepared plate 20. The plates were air dried and number of spots were noted and Rf value were calculated. Spots were visualized by respective spraying agents. Numbers of solvents systems were tried but the maximum resolution was shown in Toluene: ethyl acetate: Formic acid and n butanol: acetic acid: water for the ethanolic and aqueous extract respectively.[40].

HPLC: To isolate the active principles, the fraction was at first chromatographed in silica gel revealing two substances. One gave an intense yellow spot in TLC (visible and UVfluorescent) and was called flavonoid A, the second did not show any fluorescence and was named flavonoid B. Both showed a colour reaction with ferric chloride. Since analytical HPLC with reversed phase C18 columns gave a much better separation of the compounds A and B, later on we used semi-preparative HPLC on reversed-phase materials and acid-free solvents for their isolation. The devised HPLC-system also serves analytical purposes well, Besides being suitable for quantitative standardization of extracts and fractions from the flowers of Butea monosperma for isobutrin content, it is useful for detection of butrin and sobutrin in plant extracts. Both substances can easily be assigned by on-line recorded UV-spectra (photodiode-array detection technique) shows a fingerprint of the active butanol fraction, in which the peaks of butrin and isobutrin have been assigned.[20].

CONCLUSION: - Herbal medicine are still widely using for primary health care in so many countries because of cultural acceptability, compatibility with human beings and with lesser side effects. In this study we prepare herbal antidiabetic syrup from the palash flower extract. The prepare herbal syrup subjected to various evaluation parameters and compared with the standard anti diabetic syrup. Finally we can concluded that the prepared herbal syrup all evaluation parameters found to be within limits and this syrup shows anti diabetic activity.

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