A REVIEW ON FORMULATION EVALUATION OF COLD CREAM OF CASSIA AURICULATA FLOWER EXTRACT

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Abstract

The Cassia auriculata is a plant species, belongs to the caesalpiniaceae household which is historically used to treatmany diseases.Cassia auriculata used for lengthy length in a number of persistent illnesses therapeutically. Aim of the modern-day evaluation is to search literature for the pharmacological properties,safety/toxicity research pharmacognostic research and phytochemical investigation of Cassia auriculata plant.It has the wild pharmacological residences such as Anti-cancer, Anti-fungal, antibacterial, antimicrobial, anti-viral, Anti-obese andanti- diabetic.Cassia auriculata Linn is one of thecommon plant in Asia, used in Ayurveda and the literature survey ofthis plant published the presence of preliminary phytochemicalconstituents such as alkaloids, phenolics, glycosides, flavonoids,tannins, saponins, proteins, carbohydrates and anthroquinone derivatives and they all areresponsible for the strong pharmacological activities.Antimicrobialproperties of medicinal plant life and plant partssuch as flowers, roots, fruits, seeds and oils arebeing used to therapy some persistent and acute dis-eases in the course of the world. In the presentstudy, an try has been made to isolate andidentify the antibacterial compound current inthe leaves of the Cassia auriculata.The natural creamwas organized by using the use of Cassia auriculata flower extract, it wasprepared with the aid of the usage of two specific solvent of ethanol and distilled water.The resultant extract used to be analyzed by means of a range of chemical tests. Theresults confirms that each the extract have lively biomolecules. Cassiaauriculata linn flower extract integrated into inert cream base thenthe biological exercise and cream contrast had been piloted. The resultshows water extract of Cassia auriculata natural cream was once betterresults than etanol extract the usage of natural cream in all standard parameters. [1,2,3]

Keyword: Cassia auriculata linn, Wound healing, Antibacterial, Antioxidant, Cassia auriculata, antiinflammatory, activity, Safety, Phytopharmacological review, Flavonoid, Flower extract, etc. [4,5]

Introduction :

Traditional medicine is still the primary form of treating diseases of majority of people in developing countries including India; even among those to whom western medicine is available, the number of people using one form or another of complementary of alternative medicine is rapidly increasing worldwide.Cassia auriculata L. is known as "Avaram" in Tamil & commonly known as TarnnersCassia. It is a shrub belongs
to Caesalpiniaceae family. Various part of the Cassia auriculatahave the potential to treat many diseases and thus the plant has been reported to possess Antimicrobial,Anticancer,Anti-

inflammatory,Antioxidant,Antiulcer,Antidiabetic,Wound healing activities.Cassia auriculata is One such herb, has a reputation for beingeffective against a number of diseases. It has stunning yellowflowers and is an evergreen plant. Different regions of Asia,particularly India support the growth of this plant. There are many herbs in the Siddha system of medicinewhich have potent anti-diabetic and anti-
hyperglycemicactivity for the management of diabetes. Secondarymetabolites or phytoconstituents present in these herbsare responsible for the therapeutic activity. Phenolics,alkaloids, saponins, terpenes, lipids etc. are the mainclasses of plant secondary metabolites. The phenoliccompounds in herbs act as antioxidants due to their redoxproperties, allowing them to act as reducing agents,hydrogen donors, free radicals, quenchers and metalchelators.The plant's leaves are astringent, acrid, cooling, diuretic, bitter, ophthalmic, and vulnerary. The entire plant has medicinalsignificance from the tip to the root, demonstrating therapeutic properties like anti-microbial, anti-diabetics, hepatoprotective,antiperoxidative, antiviral, and antipyretic. A plant's bark is used to cure gout, gonorrhea, and rheumatic pain, while the roots aresignificant in urinary
disorders, fever. [6,7,8]

Fig. Cassia auriculata Plant

Scientific Classification: [8]

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Fabales
Family	Fabaceae

Sub family	Caesalpinioideae
Genus	Cassia
Species	Cassia auriculata L.

Discription :-

Macroscopic Characteristics :-

Avaram (Cassia auriculata Linn), family Caesalpiniaceae, is also known as Avaram tree, The leaves are alternate, stipulate, paripinnate compound, very numerous, closely placed, rachis 8.8-12.5 cm long, narrowly furrowed, slender, pubescent, with an erect linear gland between the leaflets of each pair, leaflets 16-24, very shortly stalked 2-2.5 cm long 1-1.3 cm broad, slightly overlapping, oval oblong, obtuse, at both ends, mucronate, glabrous or minutely downy, dull green, paler beneath, stipules very large, reniformrotund, produced at base on side of next petiole into a filliform point and persistent.Its flowers are irregular, bisexual, bright yellow and large (nearly 5 cm across), the pedicels glabrous and 2.5 cm long. [9]

Microscopic characteristics :-

Leaves : A total twenty-nine compounds were identified in the leaves Of C. auriculata mainly 3-omethy- d glucose (48.50%) , alphatocopherol–beta–D –mannosidase(14.22%) , n-hexadecanoic acid (3.21%), resorcinol (11.80%), octadecenal (2.18%) andcarboxylic Acid (1.98%).firm, Alternate, stipulate, paripinnate compound, verynumerous, closely placed, rachis 8.8-12.5 cmnarrowly rugged, pubescent, and thin, with vertical and linear Gland between the leaflets of each pair. And shortly stalked, 2-2.5cm Long, 1- 1.3cm wide. Marginally overlapping, rectangular, dull-witted At both ends, and glabrous.long, narrowly furrowed, slender, pubescent, withan erect linear gland between the leaflets of eachpair, leaflets 16-24, very shortly stalked 2-2.5 cmlong 1-1.3 cm broad, slightly overlapping, ovaloblong, obtuse, at both ends, mucronate, glabrousor minutely downy, dull green, paler beneath,stipules very large, reniform-rotund, produced atbase on side of next petiole into a filliform pointand persistent. [10]

Flowers : Flowers are bright yellow and irregular and large (5cm). The pedicels are glabrous, and 2.5cm long, the five sepals are Separate, concave, membranous, and unequal. Two external and three Internal sepals, outer ones are longer than the inner ones. The petals 5 in numbers are free imbricate, crisped along the edge, and bright Yellow veined. The panthers are 10 in numbers also separated by the Three stamens barren; the ovary is unilocular, superior, with peripheral Ovules.[11]

Fig. Cassia auriculata Flowers

Seeds : The seeds of C. auriculata contain 40.8% of light yellow Coloured fatty acid. Major components among fatty acids content are Palmitic, oleic, and linoleic acids. The ethanolic seed extract showed The presence of benzoic acid, 2- hydroxyl methyl ester (0.07%), Glycine, n-(trifluroacetyl), 1-methybutul ester(0.10%), 2'3 dihydro 3'5dihydro-6methyl-4hpyaran-4one(0.12%), cupric acid ethyl ester (.016%), resorcinol (0.21%), water-soluble galactomannan like betaD-manopyranosyl-1(1-4)-o-beta-D- manopyronosyl (1to4)-o-beta–Dmonopyranose.[12]

Roots : Roots of C. auriculata shows the presence of anthraquinone Glycosides suchas 1,3-dihydroxy-2 methylantraquinone, 1,3,8-trihydroxy- 6methoxy -2 methyl-lantraqunone, 1, 8- dihydroxy -6 - methoxy2methyllantraqinone-3-o-rutinoside, 1,8-dihydroxy-2-Methylantraqinone-3-o-rutinoside and flavone glycoside.And also, Somecompounds like root bark are a chalcone 3,6,-dihydroxy-4-Methoxychalcone, and twoleucoanthocyanins like leucocyanidin-3-o-rhamnopyroside and leucopeonidin-3-o-1-rhamanopyroside .[13]

Fruit : Fruits are pale brown or green in colour and little legume, 7-11cmlong, 1.5cm broad, rectangular, long style base, flat, thin, Papery, pilose,undulate crimpled and tripped with long style base. It Has about1220seeds per fruit, each in its distinct cavity.[14]

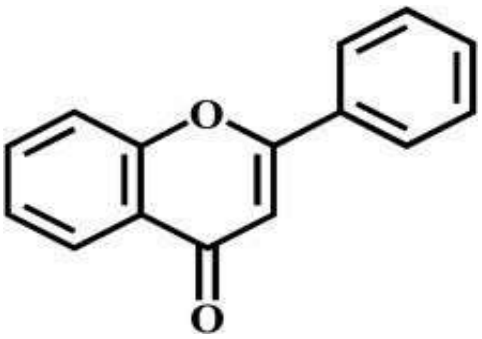
Chemical Constituents :-

Material and Methods :-

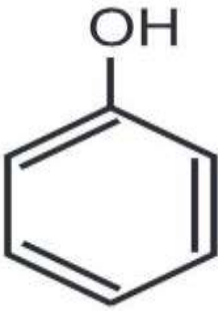
Collection of plant material :-

The plant Sesbania grandiflora used to be gathered from Medicinal backyard of UIPS, Ujjain, M.P. and was authenticated through Dr. S. N. Dwivedi, Prof. & Head, Department of Botany, Janata PG College, APS, University, Rewa, M.P. and Voucher specimen No. SD/SG/210 used to be deposited in our department. [19]

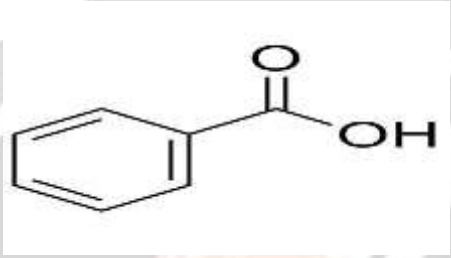
Preparation of plant powder:-



Flavonoid



Phenol



Benzoic acid

Composition :

Ingredients	**Working Formula**	**Role**
Cassia Auriculata (Flower Extract)	5 gm	Skin Treatment
Liquid Paraffin	6.86gm	Emollient
Beeswax	1.12gm	Emulsifing Agent
Paraffin wax	6.86gm	Lubricant
Borax	0.56gm	Emulsifing Agent
Cetyl Alcohol	0.14ml	Thickening Agent
Perfume	q.s	Flavouring Agent
Distilled water	q.s	Vehicle

Methods of Extraction :

- **Maceration with ethanol :**

In the whole plant flower part was separated and dried under shade for 15 days. The dried Product was powered using mechanical grinder. The powder was sieved through sieve no: 22 To get uniform particle size. About 1kg of coarse powder was macerated in ethanol (1.5L) for 5 days with occasional shaking, after completion of the maceration, the ethanolic extract was Filtered and concentration at 550C on water bath till it acquires ¾ concentration.[17]

- **Maceration with water**

About 1kg of coarse powder was macerated with water (1.5L) for 5 days with occasional Shaking, after completion of the maceration, the extract was filtered and concentration at 550C on water bath till it acquires ¾ concentration.[18] **Evaluation of Cream formulation :**

1. **Physical Evaluation:**

Physical parameters such as color and appearance were checked.

2. **Measurement of pH :**

pH of the gel was measured by using pH meter.

3. **Spreadibility :**

Spreadibility was determined by the apparatus which consists of a wooden block, which wasprovided by a pulley at one end. By this method spreadibility was measured on the basis of slip and dragcharacteristics of gels. An excess of gel (about 2 g) under study was placed on this ground slide. The gel wasthen sandwiched between this slide and another glass slide having the dimension of fixed ground slide andprovided with the hook. A 1 kg weighted was placed on the top of the two slides for 5 minutes to expel airand to provide a uniform film of the gel between the slides. Excess of the gel was scrapped off from theedges. The top plate was then subjected to pull of 80 g. With the help of string attached to the hook and thetime (in seconds) required by the top slide to cover a distance of 7.5 cm be noted. A shorter intervalindicates better spreadibility. Spreadibility was calculated using the following formula:

$$S = M \times L / T$$

Where, S = Spreadibility,

M = Weight in the pan (tied to the upper slide),

L = Length moved by the glass slide and

T = Time (in sec.) taken to separate the slide completely each other.

4. **Homogeneity**

All developed gels were tested for homogeneity by visual inspection after the gels have been set inthe container. They were tested for their appearance and presence of any aggregates.

5. **Viscosity**

Viscosity of gel was measured by using Brookfield viscometer with spindle.

6. Stability study

The stability study was performed as per ICH guidelines. The formulated gel were filled in the collapsible tubes and stored at different temperatures and humidity conditions, viz. 25oC ± 2oC / 60% ± 5% RH, 30o C ± 2oC / 65% ± 5% RH, 40oC ± 2oC / 75% ± 5% RH for a period of three months and studied for appearance, pH, viscosity and spreadibility.[19]

Invitro Assays of Anti-inflammatory activity:-

1. Inhibition of protein denaturation assay
2. Membrane stabilization method
3. Hypotonic solution induced haemolysis
4. Heat induced haemolysis
5. Assay of cyclooxygenase and 5-lipooxygenase inhibition
6. Anti- cyclooxygenase activity
7. Anti-lipoxygenase activity
8. Assay of proteinase inhibition
9. Hyaluronidase inhibition assay[20]

Pharmacological Activity:

1.Anti-diabetic by means of alpha amylase inhibition assay :

The Extract was once dissolved in di methyl sulfoxide answer and unique concentrations of the Pattern had been taken in test tubes (20, 40, 60, eighty and 100). Then the alpha amylase Used to be organized by means of dissolving it in sodium phosphate buffer and the pH was once adjusted to 6.9. After pre-incubation, 500µl of 1% starch solution was once introduced to every tube.The reactionmixtures have been then incubated at 25oC for 10 min. The response was once stopped with 1ml of di nitro salicylic acid reagent and incubated in boiling water tub for 5 minutes. The content material used cooled to room temperature. The reaction mixture used to be then diluted after including 10ml distilled water &absorbance was measured at 540nm.[21]

2.Anti-inflammatory activity by protein denaturation :

About 1% of bovine serum albumin was dissolved in phosphate buffer and pH was adjusted To 6.9. The sample was taken at different concentrations (20, 40, 60, 80 and 100). Along With the sample 0.5ml of distilled water was added with 1 ml of 1% bovine serum albumin. The tubes were incubated in dark for 20 minutes. Then the tubes were incubated in water Bath for 5-10 minutes at 57°C. After that 2.5ml of phosphate buffer saline was added to Stop the reaction. The turbidity was absorbed at 660nm in UV-Spectrophotometer. Aspirin Was use control.[22] Percentage of inhibition = (Absorbance of control – Absorbance of test sample)/ (Absorbance Of control) ×100

3.Antibacterial activity:

Anti-bacterial undertaking of flowering Stages of the cassia auriculata buds, seedling and dried stage with different solvents like DMSO, methanol, and water, it concluded that fresh flowers of the cassia auriculata have Strong

antibacterial activity. In vitro find out about of C. auriculata flower methanolExtractshows antibacterial impact with the aid of the usage of agar disc diffusion method. [22]

4. Anti-cancer activity:

C.auriculata leaf extract is motive apoptosis,which is beneficial in Human breast cancer, larynx most cancers and phone lines through its in-vitro method. The C. auriculata leaf extract inhibits the growth of hepG-2 and mcf- 7 cells thru the induction of apoptosis.Isolated compounds bought from C. auriculata are useful in the prevention of Most cancers towards colon most cancers mobilephone line HCT15, and the various Compounds from C. auriculata possess chemopreventive Activity.[23]

5. Anti-ulcer activity:

Methanolic extract of C. auriculata leaf decreases the ulcer formation In pyloric ligated rats. The share of incidence of ulcer and ulcer index parameters had been Used to an consider antiulcer activity, and the extract indicates a limit in and ulcer index compare to manage group.[24]

6.Antioxidant activity:

Cassia auriculata showed antioxidant activity using improved assay Based on the decolorization of the radical monocation of 2,2-azinobis–(3-Ethylbenzothiazoline-6-sulfonic acid) (ABTS) and 1,1-diphenyl-2-picrylhydrazyl (DPPH) Radical scavenging method.[25]

7.Hepatoprotective activity:

C. auriculata is the main component of Many herbal preparations in liver disorders. And the study found that C. auriculata leaf extract has shown hepatoprotective activity against Alcohol-induced liver damage, by protecting against free radicalmediated oxidative stress. Hepatotoxicity. Methonolic leaf extract is Used to evaluate potential events against carbon tetrachloride-induced Liver damage on Wistar albino rats. The outcome of this study was Methanol extract has liver protective property.C. auriculata leaves Acetone extract shows a protective effect on dgalactosamine induced Cytotoxicity in mice model.The methanol extract of C. auriculata Roots have potent hepatoprotective activity against ethanol and antitubercular drug-induced hepatotoxicity.[26]

8.Anti-hyperlipidemia activity:

Ethanolic flower extract of C. Auriculata in triton WR1339 induces hyperlipidemia in rats and the Ethanol flower extract has anti-hyperlipidemic activity.46 Ethanolic Extract of aerial parts of C. auriculata has anti-hyperlipidemic activity Through in-vitro studies the aerial part of the plant extract inhibit lipaseActivity.47 Ethanolic cassia auriculata flower extract reported for their Anti-hyperglycemic effect in the budding yeast cells.[27]

9.Anthelmintic Activity :

Methanolic, chloroform and Petroleum ether extract of Cassia auriculataWere tested for the anthelmintic activity Against Megascoplex konkanensis (earth Worms). Three different concentrations (20, 40 and 60mg/ml) of each extracts were used To evaluate the time of paralysis and time of Death of earthworms. Albendazole, 10mg/ml Was taken as standard reference and distilled Water (2% tween 80) as control. The Anthelmintic assay was carried out by Garg's Method. Indian adult earthworms collected From herbal garden of the institute were Washed with normal saline to remove all Faecal matter, were used for anthelmintic Study. The earthworms of 4-6 cm in length Were used for all the experimental protocol. [27]

10.Anti-arthritic property:

C. auriculata leaf has shown anti-arthritic activity in freund's complete Activity in freund's complete adjuvants induced arthritis model. The Study indicates that ethyl acetate extract has a potent effect against . [28]

Conclusion:

The Cassia auriculata flower extract were successfully formulated as cream by using inert Cream base.These Studies Have exposed that it has anti-diabetic, anti-hyperlipidemia, antioxidant, hepatoprotective, anti-cancer, antiinflammatory, anti-ulcer,Immunomodulatory, anti-microbial, anti-bacterial, anthelminthic, Nephroprotective, antiarthritic activity. Present review discuss the phytopharmacology of various parts of the Cassia auriculataPlant.The plant is studied exhaustively in last 30 years. It exhibit the high medicinal potentialOf Cassia auriculata. The review describe analytical data for identified chemical compound Including different classes like flavonoids, sterols, terpenoid and carbohydrate. The Spectroscopic data have been combining and represented. Nature having high phytochemical Diversity, many of them possesses various biological activities and medicinal properties.[29,30]

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