IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

FORMULATION ANTIFUNGAL ACTIVITY OF CASSIA AURICULATA

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Abstract:-

The fundamental intention of our paintings is to broaden an natural cream Which reduces pores and skin irritation, a antifungal and offer nourishment to the pores and skin. We formulate the secure and powerful natural cream, defend and nourish the pores and skin with the aid of using blending the herbal extract of cassia auriculata as a prime extract Ingredient after which cream become advanced and carry out assessment look at cassia auriculata leaves had been proven to antimicrobailantifungal antioxidant Properties containing lively component like alkaloid, carbohydrate, amino acid, glycoside, tannin, saponins and the cyanogenic glycosides is a exceptional image of cassia auriculata plant.The fundamental motive of look at become formulated the natural cream containing cassia auriculata extract to emphasise the significance of concerning herbal elements in pharmaceutical merchandise rather than artificial component the importance of this look at may be definitely visible because of the truth that now a days there are masses of cream to be had in marketplace with artificial chemical elements that can reason dangerous outcomes natural extracts that has true impact on pores and skin like antimicrobial, anti inflammatory, antifungal and antioxidant.

: Introduction:

1) Fungal Disease: Any contamination scenario because of a fungus most fungal infection are superficial most fungal infection are superficial and distinctive to take away some especially in older debilited or immunosuppressed or emerge as systemic existence threatening is known as as (16)fungal illness 2) Fungal Infection: Fungal Infection are of exquisite public health concerning areas of the pores and pores and skin now not protected with the resource of the use of hair characterized with the resource of the use of a red to red rash and regularly giant itching and normally because of species of trichophyton or microsporum ringworm of the body if infects the superficial layer of pores and pores and skin(16) The Fungal infections are of tremendous public health concern. The prevalence of fungal infections in patients with one of a kind ailments at the side of Covid-19 is associated with life-threatening mycoses and mortality. Fungal infections can embody superficial, cutaneous, sub-cutaneous, mucosal and systemic infections with diverse degree of severity. Organisms collectively with Candida spp. are part of human microbiota that can purpose opportunistic infections in human beings and life threatening infections (invasive candidiasis) in immuno-compromised patients collectively with HIV patients, maximum cancers patients receiving chemotherapy, and (1) SKIN INFECTIONS The pores and pores and skin is the largest organ of the human body, which incorporates about 15% of the whole man or woman body weight. It has many important functions, together with preventing more water loss from the body and shielding the body in competition to outdoor physical, natural and chemical assailants, (17) Globally, the pores and pores and skin infection

is ranked fourth among the top ten most now no longer unusualplace pores and pores and skin diseases The pores and pores and skin infection has a high incidence rate which reaches up to 80 % in developing countries . Lack of awareness and understanding of chance factors for pores and pores and skin infection is a major reason for the development of pores and pores and skin infections The pores and pores and skin works as a mechanical barrier which limits the invasion and growth of pathogenic fungi Skin protection set up

SKIN INFECTIONS The pores and pores and skin is the largest organ of the human body, which incorporates about 15% of the whole man or woman body weight. It has many important functions, together with preventing more water loss from the body and shielding the body in competition to outdoor physical, natural and chemical assailants, (17) Globally, the pores and pores and skin infection is ranked fourth among the top ten most now no longer unusualplace pores and pores and skin diseases The pores and pores and skin infection has a high incidence rate which reaches up to 80 % in developing countries . Lack of awareness and understanding of chance factors for pores and pores and skin infection is a major reason for the development of pores and pores and skin infections

The pores and pores and skin works as a mechanical barrier which limits the invasion and growth of pathogenic fungi Skin protection set up through keratinocytes and pores and pores and skin-resident T-cells is compromised in chronic pores and pores and skin ailment and it is been cautioned that the disturbance (18)

assessment of the most now no longer unusualplace fungal pores and pores and skin infections Fungal pores and pores and skin infection Fungal species Area infected Symptoms Treatment Tinea pedis Trichophyton, Epidermophyton or Microsporum. It infects the foot. It motives peeling, redness, itching, burning, and every now and then blisters and sores. Terbinafine fluconazole or itraconazole Tinea corporis Trichophyton, Microsporum, or Epidermophyton It can appear anywhere on the body It is regularly accompanied with the resource of the usage of scaly pores and pores and skin. The outer part of the sore can be raised on the equal time because the pores and pores and skin withinside the middle appears normal. Itraconazole or (18)terbinafine Cutaneous candidiasis Candida albicans Yeast infections may have an impact on nearly any pores and pores and skin ground on the body, but are most likely to stand up in warm, moist, creased areas including the armpits and the groin. It motives rash, patches that ooze easy fluid, pimple-like bumps and itching or burning Candida can purpose diaper rash in infants and might purpose infections of the nail. Oral thrush is a form of candida infection that is located withinside the mouth. Candida moreover motives vaginal yeast infections. Clotrimazole, nystatin, fluconazole, voriconazole, amphotericin B, or echinocandins(2)

Pathogenic microorganisms, which incorporates bacteria, fungi and viruses, causing infections have been a now no longer unusualplace problem for many years among the population and is developing sharply. These microorganisms can motive first-rate ailments and depending on the motives and sorts of infection, severa recovery methods can be used. Fungal infections, which can be due to pathogenic fungi, will have an impact on multiple additives of the human or animal body and antifungal tablets are normally carried out as treatment, on the identical time as antibiotics are used for bacterial infections and antiviral tablets, for viruses. Nonetheless, there are also some gift ailments which is probably due to parasites. Thus, (11)antiparasitic pharmaceutical sellers are withinside the market as cutting-edge treatment. Infections additionally may be bolstered through manner of method of concomitant ailments and also can be lethal, constant with the circumstances. Due to the developing emergence of resistance, host toxicity and numerconsequences of currently used antimicrobial tablets, the large-scale need for the detection of new molecular compounds for modern day antimicrobial tablets is an simple global problem

Nowadays, research in this situation is targeted on using natural compounds capable of showing on the (4)

Types of Mycoses: 1) Superficial cutaneous: - pores and pores and skin nails and hair - dermatophyes yeasts- oral

and topical entrepreneurs 2) subcutaneous: - pores and pores and skin nails - dermatophyes yeasts-oral and topical entrepreneurs 3) systemic: muscle tissues organs - candida corytococcus - oral intravenous control of drug 4) most now no longer unusualplace Dermatophyes: - particularly tricophyton rubrum(73%) - mentargrophytes complex (16%)- nosocomial reaching (40%) nowadays research in this vicinity is focused on the usage of natural compound capable of showing antimicrobial resistance for you to treatment of infection because of pathogenic microorganisms.In order to determine antimicrobial or antifungal interest of a compound.population arround the globe is affected every three hundred and sixty five days with the useful resource of the usage of Mycoses because of pathogenic fungi which can be categorized in subcutaneous contaneous and systemic : fungal Territory: fungal infection are greater susceptible to emerge after antibiotics treatment because of the shortage of the body very very own bacterial flora noterman ring worm, of the hair and tinea tosurana . Inflammatory lesions of tinea capitis may enlarge abscesses pustules(1)

Classification of the most relevant pathogenic fungi: 1) Yeasts: candida ,Trichosporon,cryptococcus, Rhodotorula 2) Aseptate hyphae: zygomycetes , Rhizopus , macor three) Dimorphics: Histoplasma, Blastomyces, coccidiodies , penicillium 4) Opportunists: Aspergillus, scedosporium,fusarium 5) Dermatophy: Trichophyton , Microsporon * Fungi Inavion: Dermatophytes are aerobic fungi which invade the superficial keratinized alyer of Skin,hair and nails.three genera of Fungi answerable for optimum dermatophytic infection.example: Trichophyton, Microsporum, and Epiddermophyton. : what are Fungal Infections: Most of the time ahe humans species live in peaceful coexistence with the microorganisms that surround them and fine while the safety device is damaged or the notice of thru unrecognised but occasionally the infecting dealers to elicit a response of the body which bacteria viruses parasites fungi , prions worms halmithes have all been incriminated in infection sickness of which those because of now no longer unusualplace viruses are the most feared .as strategies to govern bacterial infection in patients superior fungi end up the most risky pathogens(6)

Cassia auriculata, typically known as Tanner's Cassia or Avartaki, is a medicinal plant with an extended facts of use in traditional Ayurvedic and Siddha medicinal drug, particularly in India. It is a spreading shrub neighborhood to Southeast Asia and sub-Saharan Africa,

regularly cultivated in dry and warmth climates. The plant is identified for its numerous restoration houses and has been used to cope with numerous ailments, which consist of diabetes, pores and pores and skin infections, (5)and digestive issues.

Key factors of Cassia auriculata:

Traditional Use:

The plant has been applied in traditional medicinal drug for centuries, particularly in Ayurveda and Siddha systems.

Medicinal Properties:

Cassia auriculata is idea for its anti-diabetic, anti-inflammatory, and antipyretic houses, among others.

Parts Used:

Various factors of the plant, which consist of the leaves, roots, bark, flowers, and fruits, are used for medicinal purposes.

Common Names:

It's seemed with the resource of the use of numerous now no longer unusualplace names, which consist of Tanner's Cassia, Avartaki, and Avara gida.

Distribution:

The plant is neighborhood to Southeast Asia, sub-Saharan Africa, and India, and is widely cultivated in numerous regions.

Modern Research:

Ongoing research keeps to find out the plant's capability for treating diabetes and distinctive conditions, in addition (3)

ANTIFUNGAL ACTIVITY

Chloroform leaf extract of Cassia alata have become extra active in competition to Trichophytonmentagrophytesand ethyl acetate leaf extract have become only in competition to Candida albicans[51]. Methanolic leaf extract
showed immoderate interest in competition to Mucor, Rhizopusand Aspergillusniger than ethanolic and petroleum ether extracts [90]. Ethanolic leaf extract of

Sennaplant showed immoderate interest in competition to (dermophytic fungi) Trichophytonmentagrophytesvarinterdigitale,
T.

Mentagrophytes var. mentographytes, T. rubrum and Microsporiumgypseum and Microsporiumcanis [48].Aqueous and ethanolic leaf extracts display off a extra antifungal interest in competition to Candida albicans,
Microsporumcanis and
Trichophytonmentagrophyte better than
ketoconazole[122]. Methanol extracts from leaves ofCassia alata, Cassia fistulaandCassia torawere investigated for their antifungal interest, among 3 species,C. alatawas the only leaf extract
againstT. rubrumand M. gypseum with the resource of the usage of extract treated hyphae and macroconidiawere shrunken and
collapsed [113]. Aqueous flower extract of C.alata is an antifungal agent for inhibitor of boom of aflatoxin producing fungi(Aspergillusflavus and A.parasiticus), plant pathogenic fungi (Fusariumoxysporum
and

Helminthosporiumoryzae) and human pathogenic fungi (Candida
albicans and
Microsporumaudouinni) [2]. Aqueous, methanol and acetone root and leaf extracts inhibited (4)

Herbal cosmetics

Herbal cosmetics make use of herbal elements derived from

plants, herbs, and minerals to nourish and beautify the pores and skin and hair. These merchandise frequently exclude artificial chemicals, making them famous for the ones looking for gentler alternatives. Ingredients
like aloe vera, tea tree oil, lavender, and rosehip are not unusualplace in natural cosmetics for his or her soothing, moisturizing, and antioxidant properties. Many natural cosmetics additionally include traditional treatments from diverse cultures, including Ayurveda and traditional Chinese medicine.
These merchandise are believed to be more secure and much less possibly to cause detrimental reactions or pores and skin irritations in comparison to their artificial counterparts. Additionally, they're frequently environmentally friendly, as they're derived from renewable assets and can be biodegradable. However, it's vital to word that whilst natural cosmetics can provide benefits, character reactions can also additionally vary, and it's crucial

to pick out merchandise cautiously and seek advice from a dermatologist if you've got got unique pores and skin concerns [2].
Cream

Creams are semi-stable emulsions used to moisturize, protect, and nourish the pores and skin. They include a mixture of water, oil,
and different elements like emulsifiers, thickeners, and preservatives. Creams are flexible and are available in diverse formulations to suit

Cassia auriculata, generally called Tamar or Aavarai, is a shrub or small tree with wonderful morphological features. It has pinnately compound leaves with glands at the rachis or petiole, and large, foliaceous, widely reniform stipules. The plant produces golden yellow vegetation in corymbose racemes, and its end result are oblong-linear, flattened pods.

Detailed Morphology:

Leaves:

Pinnately compound with (4-)6-thirteen pairs of leaflets in step with leaf. Leaflets are oblong-elliptic to obovate-elliptic, rounded and mucronate on the apex. The petiole is eglandular, at the same time as the rachis has a slender subulate or fusiform gland among every pair of leaflets (besides from time to time the terminal pair).

Flowers:

Bright yellow, irregular, and large (almost five cm across). They are bisexual and borne in axillary or terminal corymbose racemes. The petals are free, imbricate, and crisped alongside the margin, veined with orange. The sepals are wonderful, imbricate, glabrous, concave, membranous, and unequal. There are 10 stamens, with the 3 higher ones being barren.

Fruits:

Oblong-linear, straight, flattened pods, 6-10 (–18) cm lengthy and 1.2-1.6 (–2.3) cm wide. They are indehiscent, with papery valves, and transversely undulate among seeds. The pods are quickly pubescent and light brown.

Material and method:-

Collection of plant:- The plant of cassia auriculara(jacq) Hall became accumulated from nearby vicinity of Borkund, Taluka: Dhule , District : Jalgoan (Maharashtra).

Authentication:- The plant ofcassia auriculata became recognized and authenticated with the aid of using the drying and pulverization of the plant fabric:- The plant leaves had been washed with distilled water and dried on a pharmacognosy laboratory desk for 2-three days on the Aditya Institute of Pharmacy, Chalisgaon, Jalgaon. Afterdrying, the leaves are beaten in a mortar and pestle and made right into a powder.

Extraction:-

A pattern of the dry powder of cassia auriculata may be extracted the usage of a Soxhlet apparatus.

The powder of leaf fabric became nicely extracted with the methanol as a solvent for twenty-four hours.

Excipients Profile : 1) cassia auriculata extract : imparting the ability antifungal properties. 2) Liquid paraffin: This a base for the Cream contain the extract. 3) Bees wax : Emulsifying and thickener. 4) Borax : Emulsifying agent that allows to create a strong ceram emulsion. 5) Cetyl Alcohol: This is thickening agent that allows create a creamier texture. 6) preservative(optional) rose oil stopping microbial boom in cream.

ource of Microorganism :-

Phytochemical Analysis:- Detection of carbohydrates:-
Molish's Test:- A few drops of focused H_2SO_4, 2 ml of extract, and 1 ml of Molish's reagent have been added. Carbohydrates create a red or reddish ring.

Detection Of Amino acids:

Ninhydrin Test: The pattern changed into heated for 10 mins in a boiling water tubtub with 2 milliliters of a 5% ninhydrin solution. A red colour confirmed that amino acids had been gift.

Detection of Alkaloids:-

Alkaloids had been detected through shifting a touch quantity of solvent-unfastened alcoholic extract into 3 check tubes, stirring it with some drops of dil. HCl, after which filtering it.

The following alkaloid reagents had been used to assess this filtrate: Mayer's reagent produced a cream-coloured precipitate; Dragandroff's reagent produced an orange-brown precipitate;
A yellow precipitate is produced through Hager's reagent.

A reddish-brown precipitate is produced through Wagner's reagent.

Detection of Glycosides

Liberman Burchard's Test:A small pattern of the extract changed into damaged down the usage of diluted hydrochloric acid in a water tubtub set to 50℃ for approximately an hour. In order to become aware of the presence of glycoside, the hydrolysate changed into moreover positioned via Liberman-Burchard's check. Glycosides are gift while a violet to blue to inexperienced reddish brown ring forms.

Cynogenic glycoside : sodium picrate check: The clear out out paper changed into first soaked in a 10% picric acid answer earlier than it changed into allowed to dry. After that, it changed into soaked in a 10% sodium carbonate answer. The dry clear out out paper changed into then brought to the beaker with the pattern from the reduce that have been corked. When the clear out out paper turns brick purple or maroon, it suggests the presence of halcone glycoside.

Detection of Tannins:-

Tannins had been detected through including a bit quantity of alcoholic extract that have been taken one at a time in water to a 5% diluted ferric chloride answer. The formation of a black or inexperienced shadeation confirmed tha tannins had been present.

Detection Of Steroids:-

Mix 10 ml of chloroform with 20 milligrams of plant material. Thoroughly blend the components after which clear out out the mixture. After that, take a check tube and upload 2 ml of the filtered liquid in conjunction with 2 ml of dry acetic acid. A tiny quantity of focused H_2SO_4 must now be brought sideways to the check tube. Steroids are indicated through a blue-inexperienced ring.

Detection of saponins:

In a graduated cylinder, 1 milliliter of distilled water turned into brought to at least one gram of alcoholic and aqueous extract whilst being constantly shaken till a quantity of 20 milliliters turned into obtained. The aggregate Was combined very well for 15 minutes. You can see that saponin is in it due to the fact a layer of froth approximately 1cm thick seems at the surface.

Detection Of Phytosterols:

1% potassium hydroxide answer turned into used to deal with the alcoholic extract till complete saponification occurred. Mix collectively five milliliters of distilled water, five milliliters of ether, and five milliliters of the extract you've prepared.Liberman Burchard's reagent is used to look at the etheral extract after it's been very well shaken and allowed to evaporate to 1/2 of its quantity. The brown-coloured strong suggests that phytosterols are present.

preparation of Cream:

Topics adding a cream photos

Preparation of Cream: 1) Extracting Cassia auriculata:

Collect the plant: Gather sparkling Cassia auriculata plant life or leaves.

2) formulating the cream: Water-in-oil emulsion: This sort of cream makes use of a base of oil with water dispersed within.

Ointment base: A strong base, frequently containing beeswax and different oils. 3)Evaluation and Storage:

Test for antifungal activity: Perform a disk diffusion check in opposition to a selected fungal pressure to evaluate the cream's efficacy.

Evaluate bodily properties: Check the cream's texture, color, and average appearance. 4) Store properly: Store the cream in a cool, darkish location to save you spoilage and degradation of the lively ingredients.

Test Name	Test Method	Present / Absence
Carbohydrates	Molish's Test	++
Amino Acids	Ninhydrin Test	+
Alkaloids	Mayer's Reagent	++
	Dragendorff's Reagent	+
	Wagner's Reagent	+
	Hager's Reagent	+
Glycosides	Liberman Burchard's Test	++
	Cynogenic Glycoside Test	++
Tannins	—	+

Evaluation parameters

Sr. No.	Properties	Observation
1	Colour	Pale yellow
2	Odour	Characteristic
3	Appearance	Semi-solid
4	Texture	Smooth

Result and discussion:-

A. This look at tested the lifestyles of medicinal lively chemical substances in an extract from cassia auriculata leaves. The lifestyles of lively chemical substances in a desk no. 2 become proven with the aid of using the phytochemical Screening of the plant below look at.

Test Name	**Test Method**	**Present / Absence**
Carbohydrates	Molish's Test	++
Amino Acids	Ninhydrin Test	+
Alkaloids	Mayer's Reagent	++
	Dragendorff's Reagent	+
	Wagner's Reagent	+
	Hager's Reagent	+
Glycosides	Liberman Burchard's Test	++
	Cynogenic Glycoside Test	++
Tannins	—	+

B. This examine targeted on growing and comparing a natural cream. Creams are evaluated primarily based totally on color, Consistency, pH, spreadability, viscosity, stability, washability, and pores and skin irritancy tests. The consequences were

Sr. No.	**Parameters**	**Results**
1	Color	Yellowish white
2	Odour	Characteristics
3	Appearance	Semisolid
4	Homogeneity	Yes
5	Consistency	Smooth
6	State	Semisolid
7	pH	5.6
8	Irritation Test	Non Irritant
9	Viscosity	—

Antifungal Activity : The Antifungal interest refers back to the cappotential of a substance to kill or inhibit the increase of fungi, which could purpose infections. These materials also are known as antimycotic sellers and are used to deal with numerous fungal infections. Antifungals can goal fungal cells, stopping their increase and reproduction, or maybe killing them.

Antifungals	**Disk Concentration**	**Zone of Activity (mm)**		
		Sensitive	**Intermediate / SDD**	**Resistant**
Nystatin	100 U	≥15	10–14	≤10
Clotrimazole	10 µg	≥20	12–19	≤11
Fluconazole	10 µg	≥19	15–18	≤14

Voricon azole	10 µg	≥19	15–18	≤14
Itracona zole	10 µg	≥15	10–14	≤9

Conclusion

The growing international consciousness of the environmental impact

of prescription drugs and a developing preference for sustainable, natural

answers have propelled natural treatments into the spotlight. Herbal antifungal lotions, harnessing the strength of plant extract, constitute a compelling opportunity to artificial medications, imparting a

stability among efficacy and protection.one of the key strengths lies withinside the commonly well-tolerated nature of natural formulation, often related to artificial counterparts. Scientific improvements in
natural remedy studies in addition substantiate the efficacy of unique plant compounds towards fungal pathogens. This intersection

of conventional natural know-how and cutting-edge clinical validation complements the credibility of natural antifungal treatments, paving the manner for super integration into mainstream fitness care practices.
The destiny trajectory of natural antifungal lotions is marked with the aid of using sustainability, protection and efficacy making them a compelling desire in

the evolving panorama of antifungal treatments.

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