



A PHYTOMEDICINE: TANNINS AND ITS DRUG [CATECHU]

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ABSTRACT :-

Tannins are polyphenols that are water soluble and are found in many plant foods. They have been reported to be responsible for reducing feed intake growth rate, net metabolizable energy, feed efficiency and protein digestibility in laboratory animals.[1] food high in tannins are also deemed to be of poor nutritional value tannins are a kind of compound of polyphenols with a complex plant structure. tannins are mainly categorised into two types hydrolysable tannins and condensed tannins on the basis of their structure. hydrolysable tannins are properties to exhibit anticancer antiangiogenic, antioxidant, anti-inflammatory and anti ulcerative properties.[3] condensed tannins are a mixture of polyhydroxyflavan-3-ol oligomers and polymers connected between subunits of flavanoids by carbon bonds.[4] In tannins best drug example are catechu.

Keywords :- Introduction of tannins, occurrence of tannins, types of tannins, drugs, taxonomy, morphology, biological source, cultivation, chemical constituents, pharmacological activity, chemical test, uses

Introduction of tannins:-

Tannins are polyphenols that are astringent tasting in plants that can bind and precipitate protein.[6] In 1796, Seguin first used term tannins to describe substances found in plant extracts that were able to combine with animal hide protein prevent their purification and term them into leather. the term tannins refers to the source of tannins used in the leather tanning animal hides, but the term commonly applied to any large phenolic compound containing sufficient hydroxyls and other acceptable groups to make a strong protein complex and macromolecule. the molecular weight of tannins ranges from 500 to 3000

Ocurrance of tannins :-

Tannins are found in the seeds,bark,roots,leaves,and rhizomes of the following sources-

-Tannins are found in cinnamon,wild cherry,cinchona,willow,acacia mimosa barks.

-Tannins are found in seeds of cocoa,guarana,kola and areca.

-Tannins are found in leaves of hamamelis and green tea.

-Tannins are found in roots and rhizomes of kramaria and fern.

Types of tannins :-

Tannins are mainaly categorised into two types-

[1] condensed tannins

[2] hydrolysable tannins

[1] Condensed tannins-

Condensed tannins comprise a group of oligomers of polyhydroxyflavan-3-ol and polymers bond between subunits of flavanol by carbon carbon bonds.[4] condensed tannins are also known as polyhydroxyphenols or polyflavonoids.condensed tannin are soluble in water, alcohols, acetone, and can coagulate protein.[8]

[2] hydrolyable tannins-

Hydrolysable tannins are compunds contaning gallotannins or hexa hydroxydiphenic acid, also called ellagitannins, which contains a central centre of glucose or other polyol esterified gallic

acid. Pantagallyolglucose is a simple hydrolysable tannin metabolism unit from which other molecule are derived.

Drugs [Catechu] :-

Catechu is an acacia tree extract used as a food additive, astringent, tannin and dye in different forms.by boiling the wood in water and evaporating the resulting brew. it is extracted form several species of acacia but particularly sengalia catechu. It has been used as an astringent in ayurvedic medicine since ancient time as well as in breath-freshning spice mixtures. It is used in some licorice pastilles in france and italy for example.it is also important for cooking pan mixtures in south asia, such as ready made paan masala and gutka. Strong in natural vegetable tannins, the mixture is high and can be used for tanning animal hides. It is brown dye used under the name cutch for tanning and deying and for maintaining fishing nets and sails. Cutch can dye wool, silk and cotton a yellowish brown. Cutch provides gray-browns with an iron mordant and copper mordant olive browns.

Black catechu:-

Figure:- Black catechu

Taxonomy-

Domain - Eukaryota

Kingdom - Plantae

Phylum - Spermatophyta

Subphylum - Angiospermae

Class - Dicotyledonae

Order - Fabales

Family - Fabaceae

Subfamily - Mimosoideae

Genus - Acacia

Species - Acacia catechu

Synonyms :- Kattha, Cutch, Khadir-catechu, Catechu**Morphology :-**

Colour - Light brown to black □

Odour - None

Taste - Very astringent

Size - about 2.5-5 cm

Shape - Cube or irregular fragments of broken cubes or bricked shaped pieces

Biological source :-

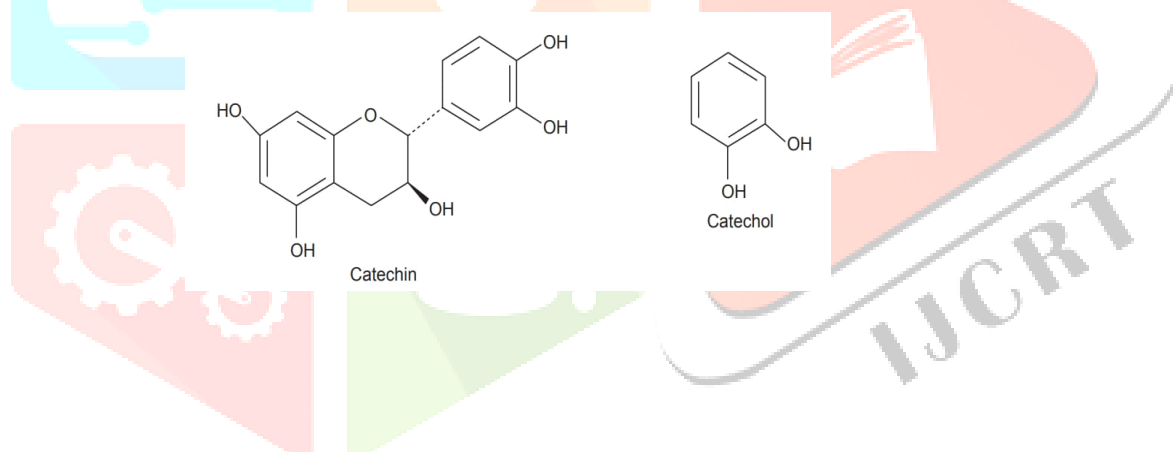
It consist of a dried aqueous extract of wild acacia catechu and wild chundra prepared from the heartwood.

Cultivation :-

A plant that tolerates a minimum temperature of about 7 degree celsius from subtropical to tropical areas. It is particularly prevalent in the drier areas, but can also be cultivated at an elevation of about 1500 meters from sea levels in the more humid climates of south-east asia. It is effective in areas where the annual temperature of the day reaches 32-39 degree celcius and mean annual rainfall ranges from 500-2000 mm.

Chemical constituents :-

Black catechu contains approximately 10 percent acacatechin. These are 5,7,3,4 tetrahydroxyflavan-3-ols diesterioisomers. Acacatechin is also known as acacia catechin. In the prescence of water, acacatechin undergoes oxidation to catchutanic acid, and the latter constituents about 30 percent of the compounds. Catechu red, querctin, gum and quercitrin are other constituentsa of black catechu. Chlorophyll and the prescence of flurocent compounds in pale catechu are not contained in black catechu.

**Pharmacological activity :-****Antioxidant activity -**

Analysis of 70 percent metanol extract of heartwood extract of black catechu showed significant antioxidant activity, iron chelating and DNA protective activity which is partly due to phenolic and flavoinoid compounds present in the standard methods including TLC study and DPPH assay showed black catechu is highly effective antioxidant.

Antidiarrheal activity -

After including diarrhea with castor oil, antidiarrheal activity was evaluated in albino rats. The antidiarrheal property of black catechu ethylacetate extract appears to be due to its astringent tannin content.

Antipyretic activity -

The antipyretic effect of black catechu is due to the prescence of flavonoids, as cyclooxygenase or lipooxygenase inhibitors are predominant in certain flavonoids compounds.

Anti-inflammatory activity –

An anti-inflammatory activity study shows that extracts containing both baicalin and catechin directly inhibit the development of inflammatory fatty acids by acting on the enzyme COX and LOX.

Chemical test :-

[1] Matchstick test (catechin test) –

A match stick dried near the burner and moistened with concentrated hydrochloric acid, dipped in aqueous plant extract. The matchstick wood turns pink or red on warming near flame due to phloroglucinol formation.

[2] Vanillin-hydrochloric test –

Vanillin hydrochloric test sample solution and applied vanillic hydrochloric reagent [vanillin 1 gm, alcohol 10 ml, concentrated hydrochloric acid 10 ml] a pink or red colour is formed due to formation of phloroglucinol.

[3] Add ferric ammonium sulphate solution to an aqueous solution, producing a dark green hue add sodium hydroxide solution to turn the colour into purple.

[4] Add a few drops of fresh aqueous extract to lime water create a brown colour and create a red precipitate on standing for a few minutes.

Use :-

- A mild form of gum disease
- Cancer
- Diarrhea
- Hemorrhoids
- Indigestion
- Bleeding
- Ulcerative colitis
- Muscle soreness caused by exercise
- Osteoarthritis
- Wound healing
- Sores in the mouth

Conclusion :- was studied about too much information of the tannins and its herbal drug catechu. It is a specific plant, it shows various types of special medicinal activity. So it plays an important role in the pharmaceutical field. Tannins and its drug catechu preparation have been widely used as a medicine since ancient times. Various researches have been conducted to prove the efficacy of catechu in various health problems. The active ingredient hidden in it. Catechu as the wonder plant extract is multiple from being an antioxidant, antidiarrheal, antipyretic, anti-inflammatory and being a cosmetic field.

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