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Benefits And Pharmacological Properties Of Annona Squamosa Linn

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ABSTRACT :-

Annona squamosa are belong to annonacea family. Various parts of this plant seed , bark, leaves, roots they contains much chemical constitutes which are useful in treating disease. There are varities of annona squamosa such as Arka Neelanchal Vikram, Arka sahan. It contain various nutritional values such as fats, calories, carbohydrates, vitamins and minerals. Annona species are mostly found at tropical and subtropical parts worldwide. Mostly it shows anticancer, anti-oxidant, antidiabetic, antihypertensive, Hepatoprotective, antiparasitic, antimalarial, insecticidal, microbicidel and molluscicidal conditioning. The main corridor of the factory is fruits, leaves, seeds, roots and dinghy, which are used in the different conditions and also have medicinal and nutraceutical values. It shows ethno- medicinal uses.

Keywords:- Pharmacological Properties, Custard Apple, Annona Squamosa, Annonaceae, benefits.

Introduction :-

Preface Custard apple is known as Annona squamosa. It belongs to the family Annonaceae. It's a small tree native to tropical India and America. It's worldwide and set up in South and Central America, Australia and Africa and is now cultivated in the Philippines, Asia and West Indies. Annona squamosal is small, semi- evanescent. Fanned shrub or small tree 3 to 8 meters (10 to 26 bases) altitudinous.[1,2.] The tree is a multipurpose tree with comestible fruits. This fruit is veritably fleshy and pulpy. The fruits are divided into 20- 30 parts with white meat pulp. Each member contains hard, Candescent brownish-black seeds inside the meat. The main corridor of the factory is fruits, leaves, seeds, roots and dinghy, which are used in the different conditions and also have medicinal and nutraceutical parcels. The custard apple fruit is also known as Sitaphal, Sharifa and Krishnaguru.[3] . Squamosa have set up that it has anticancer, anti-oxidant, antidiabetic, antihypertensive, Hepatoprotective, antiparasitic, antimalarial, insecticidal, microbicidel and molluscicidal conditioning. A wide range of ethno-medicinal uses has been related to different portions of squamosa, similar as alcohol, apophlegmatisant, cool drug, abortient and heart opiate.[3]

Table no. 1

Scientific classification	
Kingdom:	Plantae
Clade:	Tracheophytes
Clade:	Angiosperms
Clade:	Magnoliids
Order:	Magnoliales
Family:	Annonaceae
Genus:	Annona
Species:	**A. squamosa**
Binomial name	
Annona squamosa L.	

Table no.2

Synonyms
Annona Asiatica L. Guanabanus
Annona cinerea Dunal
squamosus(L.)M.Gómez
Xylopia glabra L.
Annona forskahlii DC.

Chemical constituents:- Eleven composites were insulated and linked as annonaceous Acetogenins squamocenin(1), annotemoyin- 2(2), reticulatain- 2(3), Squamocin-I(4), squamocin- B(5), squamocin(6), motrilin(7), squamostatin-D(8), squamostatin- E(9), cherimolin- 1(10), cherimolin- 2(11) from the ethyl alcohol excerpt of A. squamosaL.[4]

Leaves:-

Leaves of Annona squamosa have a number of chemical composites belonging to different groups, including phenolics, annonaceous acetogenins, saponins, flavonoids, alkaloids, glycosides, alkaloids, steroids, and terpenoids.[5]

Bark:- Six major factors were linked as 1H- cycloprop(e), azulene(3.46), germacrene D (11.44), bisabolene(4.48), caryophyllene oxide(29.38), bisabolene epoxied(3.64) and kaur-16-ene(19.13).[6]

Roots:-

Roots contain an essential oil painting (0.15); β caryophyllene, α pinene, α- humulene, α gurjunene. Chloroform excerpt of the factory A.squamosa Linn contain a active ingredients Annotemoyin. [7]

Climate and cultivation:-

Like most species of Annona, it requires a tropical or subtropical climate with summer temperatures from25 °C (77 °F) to 41 °C (106 °F), and mean winter temperatures above 15 °C (59 °F). It is sensitive to cold and frost, being defoliated below 10 °C (50 °F) and killed by temperatures of a couple of degrees below freezing. It is only moderately drought-tolerant, requiring at least 700 millimetres (28 in) of annual rainfall, and will not produce fruit well during droughts. It will grow from sea level to an altitude of 2,000 metres (6,600 feet) and does well in hot dry climates, differing in its tolerance of lowland tropics from many of the other fruit bearers in the Annona family. It is quite a prolific bearer, and it will produce fruit in as little as two to three years. A five-year-old tree can produce as many as 50 sugar apples. Poor fruit production has been reported in Florida because there are few natural pollinators (honeybees have a difficult time penetrating the tightly closed female flowers); however, hand pollination with a natural fiber brush is effective in increasing yield. Natural pollinators include beetles (coleoptera) of the families Nitidulidae, Staphylinidae, Chrysomelidae, CurculionidaePooj and Scarabaeidae.[8,9]

Varieties of Custard Apple-[10].

Custard Apple

Custard Apple: Arka Neelanchal Vikram

Crop Name: Custard apple
Division Name: Fruit Crops
Variety / Hybrid Name: Arka Neelanchal Vikram
A high yielding custard apple variety developed through clonal selection. It has high yield potential (69 fruits/plant); fruit weight (211g); TSS (23.5º Brix), sugar/acid ratio of 53.8 and a long shelf life (5.5 days).
Crop: Arka Neelanchal Vikram

Custard Apple: Arka sahan

Crop Name: Custard apple

Division Name: Fruit Crops

Variety / Hybrid Name: Arka Sahan

Average fruit weight is 410.0g.High TSS (30.0°B), fewer seeds (9seeds per 100g pulp), high pulp recovery (70.0%) and good shelf life (6days). On an average, 12 tones of fruits can be harvested / ha. It requires assisted pollination or fruit set.

Crop: Arka Sahan

Morphological characters of Annona squamosa Linn.-[11]

Character	Seeds	Leaves	Stem	Roots	Fruits
Colour	Black	Green	Green To Brown	Light Brown/Dark Brown	Greenish Outside, Whitish Pulpy Inside
Odour	Odourless	Characteristic Odour	Characteristic Odour	Odourless	Sweetish
Taste	Tasteless	Bitter	Slight Bitter	Bitter	Sweetish

Table no. 3

Nutritional value of annona squamosa.-[12]

Nutrients	Amount
Water	183g
Protein	5.2g
Ash	1.9g

Table 4. Basic components of custard apple calories

Nutrients	Amount
Total Calories	235
Calories From Fats	6.1
Calories From Carbohydrates	231
Calories From Protein	17

Table 5.Differential Components Of Custard Apple Calories

Nutrients	Amount
Total Fat	725mg
Saturated Fat	120mg
Monosaturated Fat	285mg
Polysaturated Fat	100mg
Omega 6-Fatty Acid	100mg

Table 6. Fats And Fatty Acid In Custard Apple

Nutrients	Amount
Total Carbohydrate	59g
Dietary	11g

Table 7. Carbohydrates In Custard Apple

Nutrients	Amount
Vitamin A	15 UI
Vitamin C	91 Mg
Thiamine	275mcg
Riboflavin	283mcg
Niacin	2.2mg
Vitamin B6	500mcg
Folate	35mcg
Pantothenic Acid	565mcg

Table 8. Vitamins In Custard Apple

Nutrients	Amount
Calcium	60g
Magnesium	53g
Potassium	618g
Sodium	23g
Zinc	250g
Copper	215mcg
Iron	1.5g
Selenium	1.5mcg
Phosphorus	80mg

Table 9. Minerals In Custard Apple

Health Benefits Of Custard Apple:-[13]

Helps in maintaining sound,skin and hair-

It contain large amount of vitamin A. Custard apple is very effective for skin, hair and better vision . It act as moisturizing for skin and prevent the effect of premature aging. A velvety tissue and mesh can use as cream to treat ulcers and boils.

Helps in maintaining weight Custard apple also helps for weight gain. The blend of nectar and custard apple when get frequently will add the required weight and calories.

Helpful amid pregnancy-

Custard apple adds to cerebrum, sensory system and Immunity of an embryo. Regular use of custard apple like wise decreases the danger of premature delivery amid pregnancy and reduce the degree of pain amid labour.

Helps prevent asthma-

Custard apple rich in vitamin B6, which decreases the bronchial irritation and, avert asthmatic assaults.

Prevent heart issues-

Magnesium content in custard apple protects the heart from cardiovascular disease and can unwind the muscles. Vitamin B6 from custard apple tends to reduse the coagulation of homocystein which is responsible for various heart aliments.

Is useful in digestion-

Custard apple is rich in copper and dietary fiber, it helps to process, easing solid discharge and prevent from constipation .sundried custard apple mash can be crushed into powder and utilization of powder with water will cure diarrhea

Is beneficial for diabetics- The more amount of dietary fiber in these fruits has collection of sugar and decrease the danger of creating sort 2 diabetes.

Helps controls blood pressure-

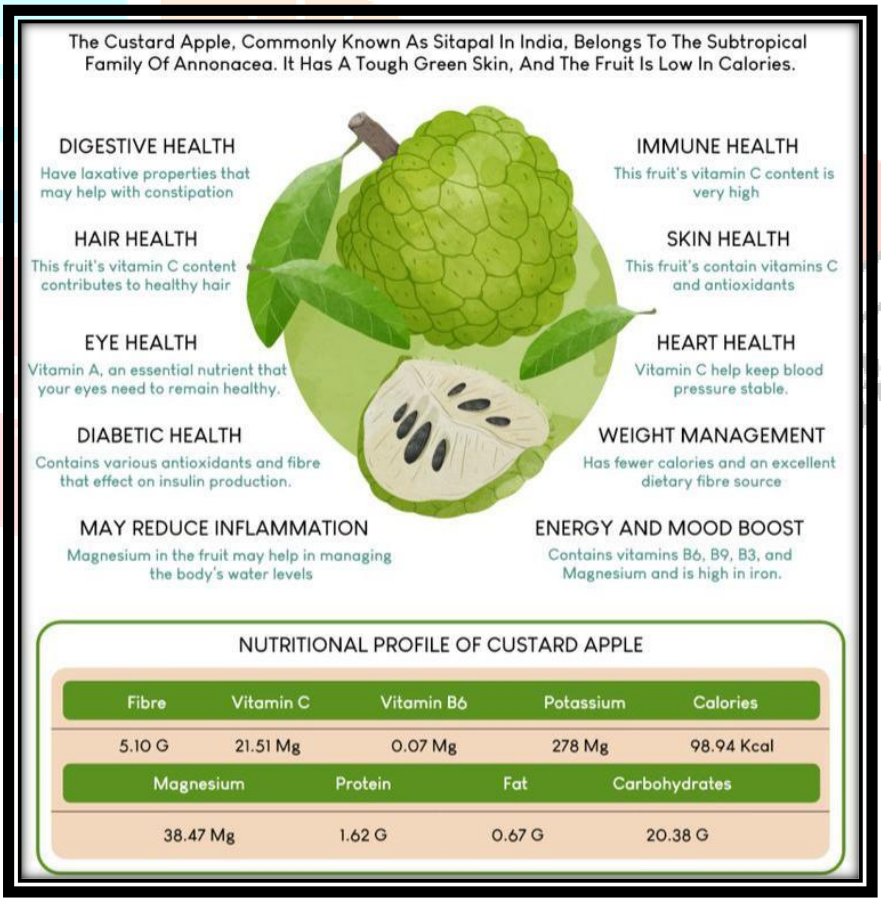
Custard apples are rich of potassium and magnesium which keep the circulatory strain level in control. The people whose pulse level is fluctuating, a custard apple a day keeps them balance.

Helps reduce levels of cholesterol-

Custard apples contain increased amounts of niacin and dietary fiber, which bring down cholesterol level adequately.

Helps to treat anaemia-

Custard apple serve as a stimulant, coolant, expectorant and haematinic.The rich iron source is helps in treating.



Custard apple pharmacological properties-

ANTIBACTERIAL ACTIVITY- The leaves of Annona squamosa Linn have seen to have antibacterial properties. Reasearch have shown the high potency of antibacterial action of the plant.[14].The antibacterial action of the excerpts is more pronounced on Gram-positive than on Gram-negative bacteria, and these findings relate to the compliances of former wireworks of medicinal shops for antibacterial exertion.

ANTIDIABETIC ACTIVITY- Recently have reported that the root extracts of A.squamosa have anti-diabetic effects in streptozotocin (STZ) induced diabetes mellitus and insulin deficiency lead to increased Glucose level.[15] Squamosa extract has an antihyperglycaemic effect and consequently may alleviate liver and renal damage associated with STZ-induced diabetes mellitus in rats.

ANTIOXIDANT ACTIVITY- Studies showed that polar extracts were found to be better free radical scavengers compared with those less polar. The leaves extracts of the two different parts showed high flavonoid content .[16.] squamosa extracts displayed antioxidant activities, with IC(50) values ranging from 7.81 to 62.5 and from 7.81 to 125.0 µg/ml, respectively using 1,1-diphenyl-2-picrylhydrazyl (DPPH) assay.

ANTI-TUMOR ACTIVITY- The plant Annona squamosa Linn locally known as Custard apple possesses potent bioactive principals in all its parts. Annona squamosa seed extract have shown, significant anti-tumor activities against human hepatoma cells in vitro and in vivo, having a potential for developing the extract as a novel anti-liver cancer drug. Aqueous extracts of Annona squamosa seeds have significant antitumour activity in vivo against AD-5 tumor .[17].Aqueous extracts of A. squamosa seeds possessed significant antitumor activity in vivo against AK-5 tumor.

ANTIMALARIAL ACTIVITY- In Annona squamosa all compounds showed moderate activity against a chloroquine-sensitive strain and a chloroquine-resistant strain of Plasmodium falcifarum .[18]

ANTHELMINTIC ACTIVITY- The anthelmintic activities of the Annona squamosa and its leaf extract have been studied . The hexane, ethyl acetate, ethanolic extracts of the crude drug at different concentrations were tested which involve determination of paralysis time and death time.[19].

ANTI- GENOTOXIC EFFECT- Studies on the genotoxicity potential of Annona squamosa have shown that the plant extract treatment significantly altered serum enzyme levels in oxidative stress conditions .[20.]

ANTIFERTILITY EFFECT- The seed extract of A. squamosa Linn was investigated for post coitus antifertility activity. The seed extract of A squamosa Linn shows antiimplantational and abortifacient activities.[21]

Marketed product of custard apple-

Custard apple seed oil- custard apple seed oil properties-it is treasured with skin enriching properties Vit C,Vit B5,Vit A ,also it contain zinc and copper. Custard apple seed oil uses.

-used as moisturizer and prevent dry skin. It has antiageing properties.

• **Custard Apple Oil**

- **Custard Apple Essence**
- **Custard Apple Power**

Major Advantage

High cure of potassium

Custard apple is a good source of potassium, containing about 618 mg in 1 of 3 mug(250g), about 18 of the diurnal recommended potassium input. While potassium is essential to your health, getting too much of it can be worse than not getting enough inordinate consumption of custard apples can affect in redundant potassium in yourbody, causing your heart to beat desultorily and a heart attack in the worst- case script. It can also beget other issues like dehumidification, Addison's complaint, and internal bleeding.

Weight gain Utmost people get enough calories from their diet formerly, and adding a custard apple on top of that will increase your diurnal calorie input. Custard apples are bad for weight loss, especially for people trying to lose weight. One mug of custard apple contains 235 calories, which may beget you to gain weight rather than lose weight.

Fiber isn't always good Fiber is an essential part of any diet, and you must be eating it from other foods. Eating 1- 2 custard apples will significantly raise your input offiber.eating further than 70 grams of fiber per day isn't advised by experts and can lead to side goods.

Avoid custard apple seeds One of the most major disadvantages of custard apple is the seed outside. According to a study, Custard apple seeds are largely irritant and poisonous to mortal corneal epithelium (the cornea's protection) and conjunctiva(the eye's protection and lubrication). It may also beget severe eye

injury, conceivably leading to blindness. Likewise, according to study the cases should also be informed about the toxin of custard apple seeds and their implicit to beget blindness.

Iron can be your adversary Custard apple is an iron-rich food without mistrustfulness. A diurnal serving of1.5 to 2 custard apples provides further than 8 of the diurnal iron demand. Still, you should be apprehensive that iron is one of those nutrients that the body has no easy way to exclude. This means that if your body becomes overloaded with iron, you'll be unfit to get relieve of it. The only most effective way to get relieve of iron is blood loss. eating Custard apples in redundant may load your body with iron, which can beget side- goods like puking, diarrhea, and damage to the intestine and other organs. Also, consuming too important iron over time can harm your heart and liver.

Summary -

Annona squamosa Linn., commonly known as Sugar Apple or Sitaphal, is a fruit-bearing plant belonging to the family Annonaceae. It is widely cultivated in tropical and subtropical regions, especially in India, Southeast Asia, and South America. The plant is valued for both its nutritive fruit and medicinal properties.

The fruit is rich in carbohydrates, vitamins (particularly vitamin C), and minerals like calcium and potassium, making it an important dietary source. Various parts of the plant—including the leaves, bark, roots, fruit pulp, and seeds—contain bioactive compounds such as alkaloids, flavonoids, tannins, terpenoids, and annonaceous acetogenins. These phytochemicals contribute to its wide range of pharmacological activities.

Research has documented several medicinal properties of A. squamosa, including antidiabetic, antioxidant, anticancer, antimicrobial, anti-inflammatory, hepatoprotective, and insecticidal effects. The leaves are particularly noted for their hypoglycemic activity, while acetogenins present in seeds and leaves show strong cytotoxic (anticancer) potential. However, the seeds are toxic if ingested and must be handled with caution. Overall, Annona squamosa is a nutritionally rich and pharmacologically significant plant with extensive traditional and modern medicinal applications, though toxic parts must be used carefully**.**

Conclusion-

A. squamosa is a tropical fruit tree on which extensive benificial and pharmacological investigations have been implemented. Except for being an important part of the food industry, A. squamosa has been proven to possess a series of bioactivities. From the detailed literature survey above, the most promising are considered as antibacterial, antioxidant,antihelmentic,antidiabetic,anti genotoxic etc activities are observed.

The chemical constituents of the plant Annona squamosa has shown the potentially useful source of nutraceutical and flavouring agents. There are various benefits of this fruit for human body as well as for human skin. Even the seeds are used for the production of oil which is used as insect repellent, pesticide and weedicide etc.

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