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Review Article

Prevalence of Phytochemical and Pharmacological Properties; Furthermore, a Miraculous Healing Plant in the Contemporary Time, *Annona reticulata*

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ABSTRACT

As old as humanity itself, medicinal plants have been used to treat illnesses. The use of medicinal herbs has not decreased despite any scientific advancement. The history of the relationship between mankind and the search for drugs predates now. There used to be a dearth of information regarding therapeutic plants, but his search never came to an end. Man's long-running battles with disease prompted him to hunt for pharmaceuticals in the barks, seeds, fruit bodies, and other sections of plants, which led to the understanding of employing therapeutic plants. Modern science has recognized its importance, accepted the active action, and added a variety of plant-based medications that have been used for millennia by ancient cultures to modern pharmacotherapy. One such plant that may be proudly included in this group is *Annona reticulata*. Phytochemicals and other plant-derived molecules are used in a variety of products, including medicines, cosmetics, food supplements, and other goods. *A. reticulata* serves as a source for both commercial and therapeutic products. There are many different therapeutic benefits it can have, such as anthelmintic, analgesic, anti-inflammatory, antipyretic, wound-healing, anti-cancer, and cytotoxicity effects. A wide variety of phytochemicals, including tannins, alkaloids, phenols, glycosides, flavonoids, and steroids, are widely distributed in it. The purpose of this review is to evaluate the potential value of the *A. reticulata* plant in the creation of new plant-based medications. The healing power of medicinal plants has emerged in the modern era as a mirror of light.

Keywords: Medicinal Plants, *Annona reticulata*, Phytochemicals, Healing power, Plant based medications.

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INTRODUCTION

Plants are well known for their medicinal value and fragrant qualities. As coloring, preservatives, sweeteners, and additives in many pharmaceutical compositions, extracts made from diverse plant sections have therapeutic qualities.[1] Due to the active chemicals in medicinal plants that are responsible for their varied pharmacological effects; these plants have the potential to be a source of human health. Plants are thought to be the primary source of therapeutically beneficial secondary metabolites since they contain a vast number of these compounds. Plants have also been effectively used to create cosmetic and toiletry preparations in addition to pharmaceutical formulations.[2] The side effects of herbal treatments are less severe. Synthetic drugs have addictive potential when used frequently, whereas plant-based medicines do not have these drawbacks and are generally less dangerous than synthetic drugs. Pharmaceutical companies also use commercial plant sources to create synthetic compounds.[3]

For their main healthcare requirements, the majority of the populace of developing nations use plant-based traditional medicine.[4] Ayurveda, the indigenous medical system of India, is similarly based on plants. Plant-based medications serve as the body's first line of defense and aid in the recovery of health. The herbal industry uses extracts from various plant sections as raw materials since they have a wide range of medical characteristics.[5] The investigation of chemical components derived from plants may yield fresh ideas for the creation of innovative pharmaceuticals.[4] Many plants contain medicinal properties that can hasten the healing process by changing the biochemical reactions of the cells involved in wound healing, according to studies conducted over time.

In many indigenous and traditional sources, plants have been used extensively as medical treatments. Several plant parts are used in the production of medication, including leaves, fruits,

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barks, roots, and even seeds (Figure 1). *Annona reticulata*, a member of the Annonaceae family of plants, is one of many common plants that are miraculously effective in treating a variety of illnesses. *Annona* is one of the 129 genera in the family Annonaceae and has 119 species, eight of which are cultivated for commercial purposes.[6] Indigenous people have treated a variety of illnesses with Annona species, including parasite infections, inflammation, diabetes, and cancer.[7]

Annona reticulata is also known as Ramphal in Hindi and bullock's heart in English. In tropical and subtropical areas, *A. reticulata* is widely dispersed.[8] As of 2005, Originally from the West Indies, the plant.[9] It is cultivated extensively and has become a native tree and shrub in India that consumes fruit. It can be found in Southern India, Bengal, and Burma. It is only found naturally in the tropical regions of North and South America, particularly the West Indies and South America. The plant is commonly farmed in Bangladesh and Pakistan.[10-12]

Numerous studies have found that each plant component has unique pharmacological characteristics,[13,14] such as Antipyretic,[15] anthelmintic,[16] antihyperglycemic,[11] antiulcer,[17] *in vitro* cytotoxic and recombinant caspase inhibitory,[18] antinociceptive,[19] antioxidant, mosquito larvicidal and antimicrobial,[20] antiepileptic[21] from leaves; antioxidant, physicochemical microbial and sensory[22] from fruit pulp; antioxidant[23] from fruit; analgesic and CNS depressant,[10] analgesic and anti-inflammatory[24] from bark; anti proliferative,[25] antioxidant and antimicrobial[26] from roots; wound healing and anti-marking[13] from seeds.

According to research showing anti-tumor effectiveness in both *in vitro* and *in vivo* settings, it exists.[27] Along with the development in the large global demand for plant-based medicines, the necessity for raw materials had increased. *A. reticulata* was mostly propagated by seed, although seed germination was extremely poor and time-consuming due to its dormancy or stiff seed coat.[28] Techniques for growing plant tissue may provide an efficient replacement and dependable method for mass-propagating endangered and medicinally important plants.[29] Due to its medicinal importance, *A. reticulata* has increased its demand. Hence, it is prerequisite to look into *in vitro* propagation of *A. reticulata.*

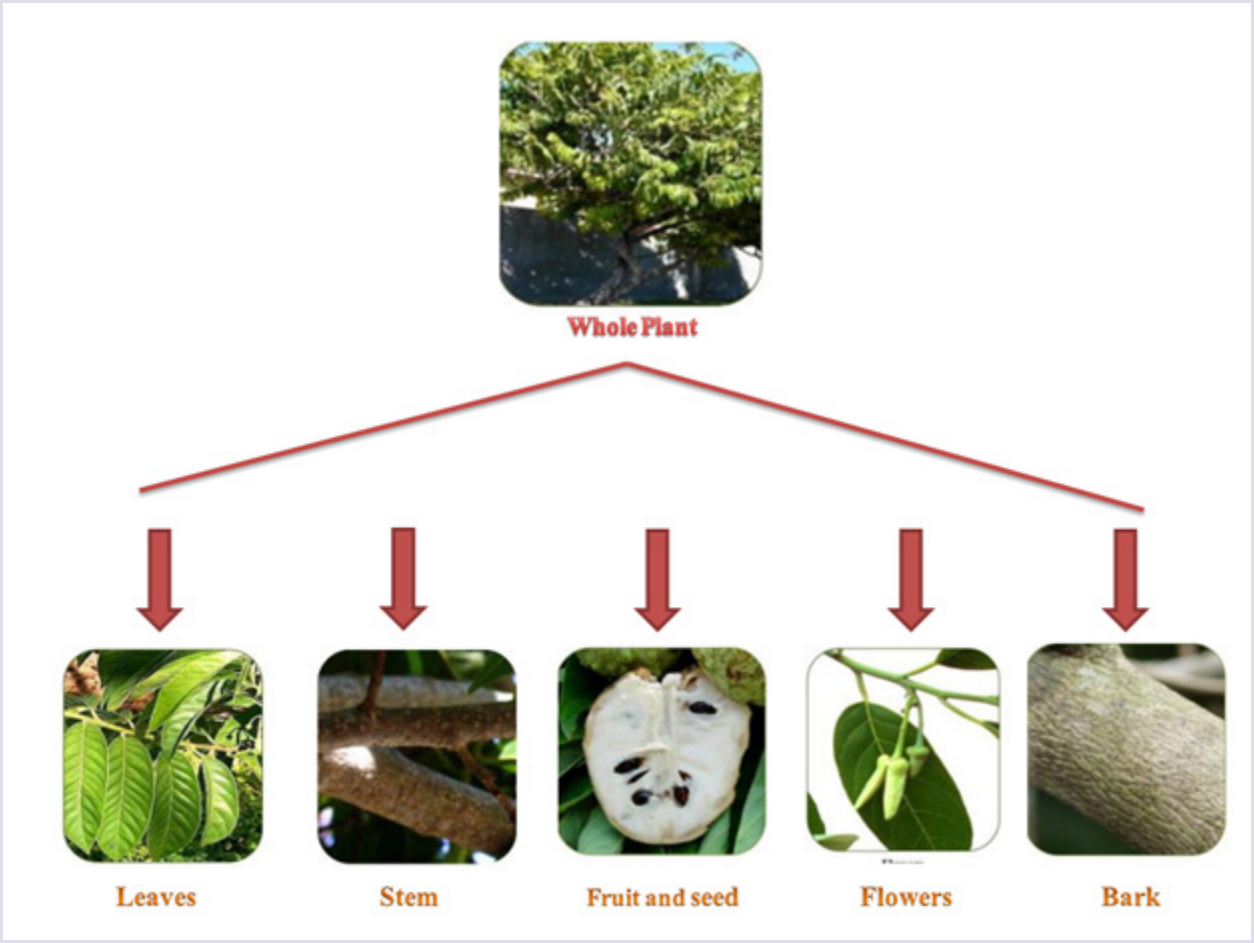

Figure 1: Different parts of *Annona reticulata* having pharmacological properties.

Phytochemicals

We are well aware of the importance of plants. Growing awareness of the importance of medicinal plants has emerged in recent years. There are countless possible medicines in the plant kingdom. Plant-based medications are generally accessible, affordable, effective, safe, and rarely have side effects. Plants that have been chosen for medicinal use throughout thousands of years are the most logical choice for evaluating the current search for therapeutically effective innovative drugs, such as anticancer treatments. According to the World Health Organisation, the best source for a variety of pharmaceuticals is medicinal plants. In developed nations, traditional medicines with ingredients derived from medicinal plants are used by about 80% of people. However, more study on these plants is needed to understand their traits, stability, and efficacy.[30]

The therapeutic value of plants is found in their bioactive phytochemical's components, which have defined physiological effects on humans.[31] The most important bioactive phytochemicals components include alkaloids, essential oils, flavonoids, tannins, terpenes, saponins, phenolic compounds, and many others.[32] In addition to tannins, alkaloids, carbohydrates, terpenoids, steroids, and flavonoids, medicinal plants also contain other bioactive substances. On the human body, these substances have specific physiological effects.[33] The primary or secondary metabolism of living things produces these chemicals. Secondary metabolites are chemically and taxonomically diverse substances with an unknown function. They are extensively used in a variety of fields, including human therapy, veterinary care, agriculture, and scientific study.[34]

Phytochemicals are bioactive substances derived from plants. Because the plants that produce them may not need them, they are known as secondary metabolites. All portions of the plant body, including the bark, leaves, stem, root, flower, fruit, and seeds, are naturally synthesized to produce these substances; hence any part of the plant body may contain active ingredients (Figure 2). Phytochemicals can vary from one plant part to another in terms of quantity and quality. Additionally, plant secondary metabolites have intriguing chemical and pharmacological qualities for human health.[35] Since the beginning of time, plant products have been used in phytomedicines. This means that any part of the plant, including the bark, leaves, flowers, seeds, and more,[33] may contain active ingredients. Since this knowledge will be useful for the production of complicated chemical substances, knowledge of the chemical components of plants is desirable.

Phytochemicals in *Annona reticulata*

A. reticulata is a member of the Annonaceae family and the genus *Annona*.[36,37] Ramphal, Bullock's heart, and Custard apple are further names for the plant.[38,39] It is a little, glabrous tree that thrives in tropical climates.[40] *A. reticulata* grows to a height of 6.0 to 7.5 m. It has a lot of lateral branches. The cylindrical stems have very short coffee-colored hairs and lenticels.[38] Membranous, acute, oblong, lanceolate, rounded, cusped, or obtuse leaves have rounded or obtuse leaf bases. The lower surfaces of the leaves have a few spreading hairs while the top surfaces are glabrous. There could be one, two, three, or four blossoms on the lateral pedicel. Fruits are rough, shaped like a heart, and start out yellow before turning yellowish red as they ripen.[40] Fruits are astringent, delicious, and helpful for blood issues.[41] The smooth, dark-colored seeds are blackish.[42]

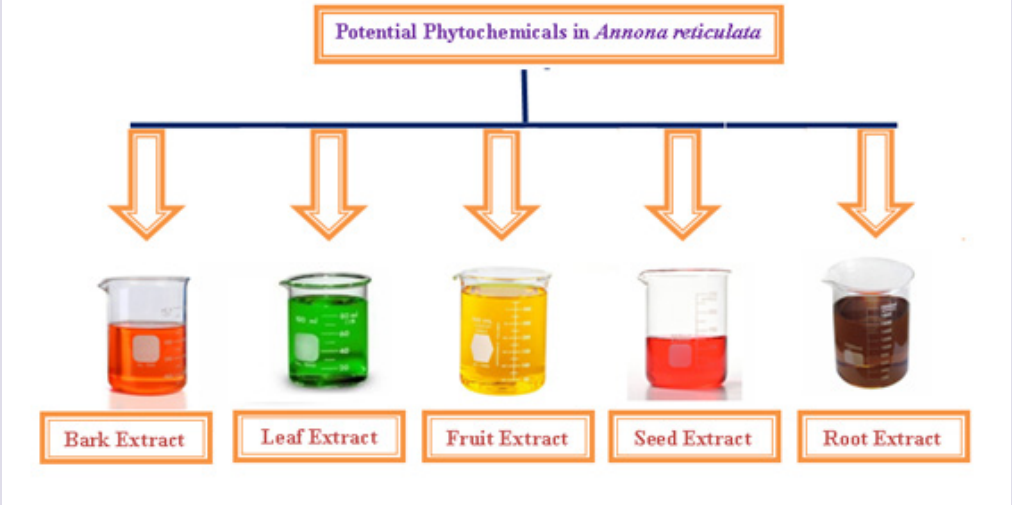

Figure 2: Phytochemicals extracted from various parts of the plant.

Medicinally speaking, plant components including leaves, bark, seeds, and roots have a variety of therapeutic benefits, including anticancer, CNS depressant, analgesic, antihyperglycemic, anti-inflammatory, antiproliferative, wound healing, and antiulcer action.[43,11] The root that contains the acetogenin neoannonin as well as aporphine alkaloids such liriodenine, norushinsunine, and reticuline.[10] Minerals including Ca, P, K, Mg, Na, Cl, S, Mn, Zn, Fe, Cu, Se, Co, Ni, and Cr were also discovered to be abundant in the plant.[44,12,45] *A. reticulata* has been classified through the identification of tannins, alkaloids, and phenolic chemicals from the stem bark. Among the many chemical substances found in leaves are alkaloids, amino acids, carbohydrates, hormones,

Bark Extract	• Bullatacin • Kaur-16-en-19-oic acid • Tannins, alkaloid and phenolic compounds.	63 64 24
Leaf Extract	• Annonaretin A • Butane, 2,3-dichloro-2-methyl, Lactic acid dimer	65 66
Fruit extract	• Pinene, Myrcene, Limonene, Terpinen-4-ol, Germacrene D • n-Hexadecanoic acid, 9,12-Octadecadienoic acid	67 68
Seed Extract	• acetogenins • Cycloreticulins A and B • Germacrene D	69 70 71
Root extract	• Aporhine alkaloids, liriodenine, norushinsunine, reticuline and neoannonin • Norushinsunine, Reticuline, Acetogenin	72 44

Figure 3: Phytochemicals from *Annona reticulata.*

flavonoids, protein, tannins, glycosides, and phenolics. The presence of tannins, acids, alkaloids, carbohydrates, and proteins in the root has been demonstrated (Figure 3).[46,47,25]

With blossoms that open in August and close in December, the tree starts yielding fruit between the ages of 4 and 7 years. It can produce up to 70 fruits per year. More than halfway through the fruit is a pointed, fibrous, central core that is linked to the thick stem 59.72% of the fruit is actually edible.[48] Because the pulp has insecticidal properties, it is used to kill lice. The dry, under ripe fruit produces a black dye. The unripe fruit is reported to be astringent, anthelmintic, antidysenteric, and antidiarrheic and is used to cure fever and an enlarged spleen. The ripe fruits reduce biliousness, quench the thirst, and prevent vomiting.[49] The flesh can be separated from the skin and eaten simply or garnished with a little light cream and sugar. After being pressed through a sieve, it is typically used to milk shakes, custards, or ice cream. The seeded meat can be blended with mashed banana, milk, and sugar to create a sauce.[50] Antioxidant and antibacterial activities can be found in the raw fruit peel.[51] The unripe fruit, which is high in tannins, is dried, crushed up, and used as a diarrhoea and dysentery treatment. Seeds are astringent, vermifugal, helpful for diarrhoea and dysentery, irritating to the conjunctiva, and an abortifacient.[52]

The *Annona reticulata* seed is 1-2 cm x 0.5 cm, more or less oblong or oval, smooth, glossy, shining, hard, blackish or brownish-black polished; endospermic; internally white; scent none; taste bitter. Transverse section of the testa reveals that the outer epidermis is followed by a zone of lignified, pitted, roundish to oval stone cells; the cotyledon is made up of compactly arranged rounded, squarish or polygonal thin-walled cells packed with a substance resembling starch grains but not turning blue with iodine; the endosperm is ruminated and is made up of polygonal compactly.[53]

The seeds are said to have astringent and vermifugal properties and help treat diarrhoea and dysentery. The oil can be utilised as a contact poison and the seed-meal is poisonous and high in nitrogen.[47] The kernels are extremely toxic, yet the seeds are so hard that they can be ingested whole without harm.[54] The seed oil exhibited anti-inflammatory properties. Squamocin, which was extracted from the seeds of *A. reticulata*, has been shown to be cytotoxic for a variety of cancer cell lines.[55] The antitumor and antipesticidal properties of bullatacin have also been discovered.[56]

An effective purgative is *Annona reticulata* root. It is used to treat blood dysentery, spinal problems, and depression. The use of the roots serves as a harsh cleanse. For toothaches, root-bark scrapings are employed. To eradicate fleas and head lice, powdered seeds are used, however it's important to take precautions to avoid getting the powder in your eyes, as doing so can be quite painful.[57] The development of both melanoma and non-melanoma types of skin malignancies, which include numerous biological pathways, is mostly attributed to exposure to ultraviolet radiation.[58] Ultraviolet radiation causes oxidative stress in skin cells, which helps to trigger a number of biological events in keratinocytes.[59] In addition to ultraviolet light, some other possible causes of skin cancer include polycyclic aromatic hydrocarbons, arsenic, tar, raw paraffin, and viruses.[60] Using Annona reticulata root extract as a skin cancer treatment is a possibility (Figure 4).

A scientific procedure called phytochemical screening analyses, looks at, extracts, assays, and other steps to identify various classes of phytoconstituents found in various areas of the basis for the development of pharmaceuticals. The active ingredients can then be extracted for further analysis and research. The procedure, known as phytochemical screening, was qualitative. The study's findings may help in the development of effective medications for a number of ailments.[61] For the separation of phytochemicals

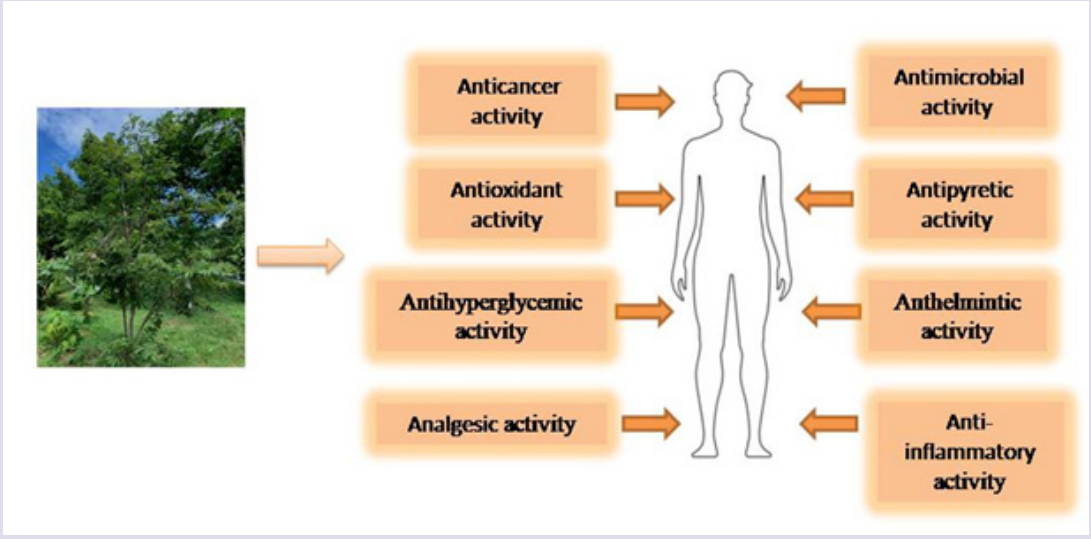

Figure 4: Pharmacological properties of *Annona reticulata*.

Table 1: **Phytochemical compounds showing anti-helminthic activity.**

Plant part	Phytochemical extracted	References
Bark	Aporphine	82
Leaf	Asimilobine	83
Leaf	Corydine	84
Root	Discretamine or Scoulerine or Aequaline	85

Table 2: **Phytochemical compounds showing anti-hypergycemic activity.**

Plant part	Phytochemical extracted	References
Leaf	Butane, 2,3 dichloro-2-methyl	90
Leaf	Acetic acid, [trimethylsilyloxy]-trimethylsily ester	90
Leaf	Ethyl tartrate, tristrimethylsilyl	90
Leaf	Xylitol, 1,5-anhydro-, triacetate	90
Leaf	Talonic acid, 2,3,5,6-tetrakis-Otrimethylsilyl-, lactone	90
Seed	2,3-Dihydrobenzofuran	91
Leaf	Gamma-Sitosterol	92,93

in *Annona reticulata*, various solvents are employed. Active components are extracted using the solvents water, ethanol, methanol, chloroform, ether, and acetone. All extracts will undergo phytochemical testing; this pre-phytochemical screening allows for the detection of all phytochemicals.[62]

Pharmacological properties

The medicinal plants are rich in essential oils and secondary metabolites that have therapeutic value. Safety is one of the key advantages of medicinal plants for therapeutic use in treating various illnesses, in addition to being economical, effective, and easily accessible. Due to these benefits, traditional medical practitioners frequently use medicinal plants in their daily practices.[73] Thus, it should go without saying that *Annona reticulata* is widely known for its pharmacological attributes. The potential of various *Annona reticulata* components in terms of biology was evaluated. The phytoconstituents and extracts that were extracted from different sections displayed a range of pharmacological characteristics. The anti-hyperglycemic, anti-epileptic, antioxidant, anti-cancerous, anti-microbial, and anti-proliferative properties of the leaves are visible. Analgesic and anti-inflammatory properties are present in the bark. The root has anti-proliferative and anticancer properties.[74]

Anthelmintic activity

Different types of worms can harm both humans and animals. Anthelmintics are a group of anti-parasitic drugs that paralyse or kill internal parasites such as worms without doing much harm to the host.[13] Around 24% of the world's population is susceptible to helminthes, which are primarily spread through soil. The most cases were reported in nations including America, China, Sub-Saharan Africa, and East Asia.[75] It is one of the most serious tropical diseases that is overlooked. Growth retardation, elephantiasis, vitamin shortages, anaemia, blindness, and inadequate protein-calorie intake can all be consequences of helminthiasis. Iron and protein are lost as a result of the worms' consumption of human tissues and blood.[76]

The bark extract of *Annona reticulata* has been used to test the anthelmintic activity.[77] The leaves of the *Annona reticulata* also exhibit anthelmintic properties in a similar manner. After being crushed, dried, and extracted with ethanol, the leaves of the *Annona reticulata* Annonaceae were further fractionated using petroleum ether, chloroform, ethyl acetate, and ethanol. The effectiveness of these various fractions as anthelmintics was tested using mature *Pherentima posthuma* Indian earthworms.

Table 3: **Phytochemical compounds showing antipyretic activity.**

Plant part	Phytochemical extracted	References
Leaf	Dopamine	94
Leaf	Salsolinol	94

Table 4: **Phytochemical compounds showing Antioxidant activity.**

Plant part	Phytochemical extracted	References
Root	Aporphine	95,96
Root	Liriodenine	96
Root	Norushinsunine	96
Root	Reticuline	96
Leaf	Neophytadiene	45
Leaf	Hexadecanoic acid, methyl ester	97
Leaf	alpha.-Tocospiro B	98

Table 5: **Phytochemical compounds showing Anti-microbial activity.**

Plant part	Phytochemical extracted	References
Leaf	Squalene	101
Leaf	Neophytadiene	102
Leaf	Stigmasta-5, 22-dien-3-ol, acetate, 3.beta	103
Leaf	Cyclohexane	104
Leaf	Octadecanoic acid	104
Leaf	Isoaromadendrene epoxide	104

Table 6: Phytochemical compounds showing Analgesic and Anti-inflammatory activity.

Plant part	Phytochemical extracted	References
Bark	Copaene	107
Bark	Patchoulane	107
Bark	Kaur-16-en-19-oic acid	107
Leaf	Caryophyllene	104
Leaf	alpha.-Tocospiro B	108
Stem bark	Reticullacinone	109
Stem bark	Bullatacin	109

Table 7: Phytochemical compounds showing anticancer activity.

Plant part	Phytochemical extracted	References
Leaf	Bicyclo[3.1.1]heptane,6, 6-dimethyl-2methylene	104
Leaf	Squalene	111
Leaf	gamma.-Tocopherol	112
Leaf	Vitamin E	114,113

The paralysis of the earthworms was induced more quickly by the ethanol extract, according to the results.[78] A dose-dependent reduction of spontaneous motility was seen in the leaves extract of *Annona reticulata*. Earthworm Eisenia fetida paralysis.[79]

The bark extract of *A. reticulata* includes aporphine alkaloids with a wide range of biological activities.[80] The alpha 1-adenoceptor is where the aporphine mostly binds, connecting to the sleep cycle and ultimately causing flaccid paralysis. The methylenedioxy ring is primarily responsible for aporphine's cytotoxic effects. They influence sodium ion channels in addition to inhibiting calcium channels.[81] Thus, when exposed to adult Indian earthworms, *Annona reticulata* bark extract showed a significant anthelmintic activity that was dose-dependent in the organism's paralysis and death. The muco-polysaccharides layer is damaged by the ethanolic extract of *Annona reticulata* leaves, which has anthelmintic activity and causes earthworms to become paralyzed and die (Table 1).

Antihyperglycemic activity

The part played by *Annona reticulata* plant extracts is amazing. When given to mice that had been given a glucose load, the crude methanol extract of *Annona reticulata* leaves displayed potent antihyperglycemic activity.[86] The antihyperglycemic effects of the methanolic extract of *A. reticulata* leaves were also documented by using an oral glucose tolerance test. This action was statistically significant and dose-dependent. The observed glucose-lowering impact from the crude extract of the leaves of both plants may occur in a variety of ways. The extracts may improve glucose absorption or augment insulin release from the pancreas.[68,87] The extracts may stop the intestines from absorbing glucose.[88] The observed reduction in blood sugar can result from any one of the three mechanisms listed above, or from a combination of mechanisms. The antihyperglycemic effect of *A. reticulata* was also demonstrated by using a rat model. In comparison to streptozocin, the extract had stronger action (Table 2)[89]

Antipyretic activity

There are numerous plants that are currently recognised to be utilised as antipyretics in conventional medical systems; *Annona reticulata* is one such significant plant. In the Patil *et al.*, 2009 investigation, the antipyretic activity was carried out after giving rats a subcutaneous injection of a 20% aqueous suspension of Brewer's yeast to cause hyperpyrexia. At doses of 200 mg/kg and 400 mg/kg, respectively, the crude aqueous extract of A. reticulata leaves was reported to exhibit an antipyretic action via suppressing hyperpyrexia in rats (Table 3).

Antioxidant activity

The fruit of *A. reticulata* is known as a delicacy of the dry region because of its incredibly sweet and delicate flesh. In 2019, Lydia *et al.* looked on the phytochemical makeup and antioxidant potential of *A. reticulata* fruit peel wastes. The phytochemical study of the fruit peel revealed the presence of carbohydrates as well as terpenoids, phenols, saponins, and tannins. The ability of the peel extract to act as an antioxidant was evaluated using the FRAP assay and DPPH free radical scavenging. Antioxidant and antibacterial potential of the root extract of *A. reticulata* was studied. The hydrogen peroxide assay and DPPH free radical scavenging were used to search for antioxidants (Table 4).

Antimicrobial activity

Microbial diseases and disorders are usually associated with numerous harmful species of bacteria and fungi. An important source of novel therapeutics, including antibacterial properties, is *A. reticulata. B. cereus* had the largest zone of inhibition, although being somewhat active against all bacterial strains.[99] Particularly, *Tricoderma viride* and *Candida albicans* exhibited decreased growth. The results show that the extract has promise as a potential source for new antibacterial medications.

Plants are used as medicine by people for a variety of reasons. This includes the improvement in health after herbal treatment, the affordable price of the medications, the dearth of synthetic drugs, particularly in rural areas, where those that were available were either fake or expired drugs, and in some cases, the local population is more accustomed to and at ease with conventional medicine.[81] Aqueous and methanol extracts suppressed Gram-positive bacteria more effectively than Gram-negative bacteria.[100] Other scientists who observed that *Annona squamosa*'s petroleum ether extracts were effective against *E. coli, P. aeruginosa, S. aureus*, and

B. subtilis while the methanol and aqueous extracts were equally effective against *S. epidermidis, S. aureus* and *B. subtilis* (Table 5).

Analgesic and Anti-inflammatory activity

The plant *Annona reticulata* is regarded as being curative. The plant's bark is used as a tonic and has a strong astringent effect. The plant's anti-inflammatory, wound-healing, anti-anxiety, anti-stress, anti-mutagenic, and spasmolytic properties have all been used. Leaf and stem extracts have inotropic, positive chronotropic, and spasmolytic properties.[105] The carrageenan-induced rat paw edoema is being inhibited or reduced by the *A. reticulata* leaf extracts' anti-inflammatory activities.[106] The outcomes also showed that the hexanolic extract's effect was weaker than the aqueous extract's. The anti-inflammatory properties of *A. reticulata* leaves may have a more polar nature, which would support traditional healers' use of the aqueous extract of this plant species to reduce inflammation. Analgesic and anti-inflammatory properties were displayed by kaurenoic acid, which was extracted from the bark of *A. reticulata*. Naloxone inhibited the activity of this physiologically active substance in both analgesic models (Table 6).[107]

Anticancer activity

Global herbal medicine, which also treats cancer, is one of traditional medicine's most important pillars. A promising prospective source of the bioactive anti-cancer chemical is found in medicinal herbs, which are used by about 70% of people worldwide. In this line, *A. reticulata* is crucial. The hunt for a lead molecule that can stop the onset of human cancer is taking place on a global scale. Nature has historically contributed significantly to this reason. Plant-derived natural chemicals like flavonoids, terpenoids, and steroids have attracted a lot of interest because of their extensive spectrum of pharmacological activities, which include cytotoxic and chemopreventive actions.[64] The illustrious investigation to look into the anti-cancer effectiveness of AR alcoholic leaf extract.[110] The presence of the AR extract's significant phytochemical components may be responsible for its strong anti-proliferative actions on the human HCT116 cell line (Table 7).

CONCLUSION

Medicinal plant species contain large amounts of important secondary metabolites. Their therapeutic applications in the treatment of many disorders have the benefit of being safe in addition to being economical, effective, and easily accessible. The goal of the current mini-review was to emphasize and provide updated data on the medical and scientific evidence that supports the many uses of *A. reticulata* in traditional medicine. Chemically, this plant includes a variety of secondary metabolites as well as minerals that may be the cause of the various therapeutic effects that have been seen. Due to its abundance in annonaceous acetogenin, *A. reticulata* may therefore be of great interest in the development of new plant-based anticancer treatments for human health and wellness. Another interesting source for topical drugs, such as those used to heal wounds, is the Annona genus of plants.

Investigating phytochemicals from various plant parts as potential bioactive agents is a significant strategy. It was formerly employed to treat a number of illnesses. It contains a variety of minerals and secondary metabolites that may have various medicinal effects. One of these is acetogenins. *A. reticulata* was demonstrated to have important medicinal qualities for treating a variety of illness situations. This research establishes the worth of the *A. reticulata* plant, which may be of great importance in the creation of new plant-based medications. This review also examines all of *A. reticulata's* data, which could be useful to researchers and scientists researching plant-based bioactive substances.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

ABBREVIATION

CNS: Central Nervous System; **m:** Meter; **cm:** Centimeter; **mg/kg:** milligram/kilogram; **FRAP:** Ferric reducing ability of plasma; **DPPH:** 2,2-Diphenyl-1-picrylhydrazyl; **Ca:** Calcium; **P:** Phosphorous; **K:** Potassium; **Mg:** Magnessium; **Na:** Sodium; **Cl:** Calcium; **S:** Suphur; **Mn:** Manganese; **Zn:** Zinc; **Fe:** Iron; **Cu:** Copper; **Se:** Selinum; **Co:** Cobalt; **Ni:** Nickle; **Cr:** Cromium.

SUMMARY

Medicinal plants are boon to mankind; their medicinal properties have been used to treat the illnesses. There are many medicinal plants which are of great medicinal properties, one such miraculous plant is *Annona reticulata*. There are many different therapeutic benefits it can have, such as anthelmintic, analgesic, anti-inflammatory, antipyretic, wound-healing, anti-cancer, and cytotoxicity effects. A wide variety of phytochemicals, including tannins, alkaloids, phenols, glycosides, flavonoids, and steroids, are widely distributed in it. The secondary metabolites extracted by the plant helps in treating many disorders. Thus, *Annona reticulata* may be of great importance in the creation of new plant-based medications.

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