Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/22172
DOI URL: http://dx.doi.org/10.21474/IJAR01/22172

RESEARCH ARTICLE

THERAPEUTIC AND PHARMACOLOGICAL POTENTIAL OF CINNAMOMUM ZEYLANICUM (DARCHINI): A COMPREHENSIVE REVIEW INTEGRATING UNANI PERSPECTIVE

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Manuscript Info

Manuscript History
Received: 12 September 2025
Final Accepted: 14 October 2025
Published: November 2025

Key words:-
Cinnamomum zeylanicum,
Darchini, Unani, True Cinnamon

Abstract

Cinnamomum zeylanicum Blume, commonly known as Darchini in Unani Medicine, i s an ancient spice of immense therapeutic importanc e. Traditionally, it has been used as a stomachic, carminative, aphrodis iac, expectorant, and tonic, widely recommended for digestive, hepatic, cardiovascular,and reproductive ailments. This review aims to integrate the Unani and modern pharmacological perspectives of C. zeylanicum to highlight its multifaceted medicinal properties,emphasiz ing its potential nephroprotective actions against drug induced kidney injuries. Unani physicians such as Avicenna (IbnSina) and Jurjani described Darchini as Muqawwi-i-Maida (stomachic), Mudirr-i-Baul (diuretic), Muharrik (stimulant), and Dafi-i-Ta'affun (antiseptic), and it was prescribed in conditions like ZofeMe'da (gastric weakness), Yarqan (jaundice), Bawasir (piles), and Khafqan (palpitation). In Unani texts, it is regarded as warm and dry in temperament (2°3°), acting as a tonic for the heart, liver, and stomach. Its Muzirrat (adverse effects) include bladder irritation, which can be corrected by co-administration with Kateera or Sandal Safed.Phytochemical analyses reveal that its bark and essential oil contain cinnamaldehyde, eugenol, linalool, βcaryophyllene, and various polyphenols, responsible for potent antioxidant and anti-inflammatory effects.

Pharmacological studies demonstrate its broad spectrum of activity, including antibacterial, antidiabetic, antihypertensive, hepatoprotective, and nephroprotective effects. The nephroprotective action is particularly evident in experimental studies where Darchini extract mitigated cisplatin-, gentamicin-, and paracetamol-induced nephrotoxicity by restoring antioxidant enzyme levels (SOD, CAT, GSH) and reducing serum urea, creatinine, and uric acid concentrations.This review provides a consolidated overview of Cinnamomum zeylanicum by correlating classical Unani concepts with modern scientific validation. The evidence suggests that Darchini serves as a bridge

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between traditional and evidence-based medicine, supporting its rational use in renal protection and metabolic disorders. The integration of Unani wisdom with contemporary pharmacology underscores its potential in developing novel phytotherapeutics for renal and systemic oxidative stress disorders.

Introduction:-

Cinnamomum zeylanicum (Darchini) is a widely utilized medicinal plant in Unani and other traditional healing systems, valued for its broad spectrum of therapeutic properties. Traditionally used as an aromatic spice-drug, it is well-recognized for its diuretic, anti-inflammatory, antioxidant, and metabolic regulatory actions. Recent scientific interest has focused on its key bioactive constituents, particularly cinnamaldehyde and eugenol, which contribute to its diverse pharmacological effects. Despite its long-standing use in classical Unani literature, the nephroprotective and systemic benefits of Darchini require further rigorous scientific validation. Therefore, this review aims to integrate traditional Unani perspectives with contemporary research to comprehensively explore the therapeutic potential of Cinnamomum zeylanicum, with special emphasis on its role in renal protection.[1]The drug Darchini is obtained from the stem bark of Cinnamomum zeylanicumBlume, a member of the family Lauraceae. It is commonly known as Qirfahe-Sailaniyah in Arabic, Darchini in Urdu, and Cinnamon in English.

The plant is a medium-sized evergreen tree that generally attains a height between 6 and 10 meters. It is widely cultivated across the Western Ghats and adjoining hilly regions of India. The bark, the principal medicinal part, is harvested twice a year—during April to July and October to December.[2]The bark possesses a sharp, aromatic, and slightly pungent taste, and is described in Unani literature as mufarreh (aromatic), qabiz (astringent), muharrik (stimulant), and kasir-i-riyah (carminative). Traditionally, it has been utilized as a therapeutic remedy in numerous ailments such as abdominal pain (dard-e-shikam),[3] urinary disorders (amraze bawl), inflammations (auram), and for its aphrodisiac (muqawwi-e-baah) and expectorant (munaffis) properties.

Additionally, it is regarded as mudirr-i-haiz (emmenagogue) and is known to aid digestion and relieve flatulence.[4]Ethnopharmacological evidence from Cameroon and other African regions reveals that the bark of this plant is used in traditional medicine to treat musculoskeletal pain, rheumatic conditions (humma-e-hadariya), gastrointestinal disturbances (khalal-e-shikam), and typhoid fever (humma-e-taifudya). It also serves as a natural aphrodisiac and antihypertensive (zightud dam) remedy among indigenous communities.[4,5] Extensive pharmacological research on Cinnamomum zeylanicum has confirmed its antihypertensive, vasorelaxant, antinociceptive, anti-inflammatory, antidiabetic, immunomodulatory, and anti-atherosclerotic activities. The plant has also demonstrated protective effects against glucocorticoid-induced atherosclerosis in experimental models, highlighting its multi-faceted pharmacological potential.[4,5]

Historical Background:-

The term “Cinnamon” originates from the Greek word “kinnamomon.” It is one of the most ancient and valuable spices belonging to the Lauraceae family, comprising around 250 species distributed across tropical and subtropical regions of the world. Varieties of cinnamon differ in color, fragrance, flavor, and geographic origin.[6,7,8]

The superior quality cinnamon is characterized by a reddish hue, sweet-aromatic odour, pungent taste, and occurs as compound quills approximately one meter in length. According to Dioscorides (1st century AD), the best variety is smooth, dark brown to reddish, moderately flexible, and emits a powerful fragrance that surpasses all other odours.[6,7,8] In Unani medicine, Cinnamomum zeylanicum is referred to as “Afimoona”, while Dioscorides mentioned it as “Qayamosees.” The drug is obtained from the bark of trees native to Ceylon (modern-day Sri Lanka).

The eminent Unani scholar Sheikh categorized Darchini into two varieties: Sadiq (genuine), possessing high potency, pleasant aroma, and fine texture; and Kazib (adulterated), which is coarse, less aromatic, and therapeutically inferior.[6,7,8] According to Hippocrates (Buqrat), cinnamon enhances vitality and prolongs lifespan. It was regarded as an effective antiseptic, demulcent, absorbent, and tonic for major organs. Avicenna (IbnSina), in his Canon of Medicine, described Darchini as an antidote for Raasa (noxious substances) and noted its beneficial effects in palpitations, mental disturbances, and fear. He also asserted its capacity to dissolve and expel cerebrospinal fluids, reflecting its broad-spectrum therapeutic potential recognized since antiquity.[6,7,8]

Vernacular names[2,3,9]

Name used in other system or country or region	Vernacular name
Arabic	Qirfahe-Sailaniyah, Dar-sini
Urdu	Darchini
Persian	Salikhahe-Sailaniyah, Darchini
Bengali	Dal-Chinni
English	Cinnamon
Hindi	QalamiDalchini, Dalchini
Sanskrit	Tamalapatra
Tamil	Lavangap-pattai, Karuvap-pattai
Telugu	Sanna-lavangapata
Marathi	Dala-chinni
Greek	Kinnamomon
Malayalam	Cheriya-ela-venna-toli, Lavanga-pette
Punjabi	Darchini, Kirfa
Chinese	Yuh, JuhKevei
Kannada	Lavanga-patte, Dala-chinni

Table 1: Vernacular names of Darchini (Cinnamomum zeylanicum)

Taxonomical Classification[10]

Rank	Name
Kingdom	Plantae
Sub-kingdom	Viridiplantae
Division	Tracheophyta
Class	Magnoliopsida
Order	Laurales
Family	Lauraceae
Genus	Cinnamomum
Species	Cinnamomum zeylanicumBlume
Common Name	True Cinnamon / Ceylon Cinnamon

Table 2: Taxonomical classification of Darchini (Cinnamomum zeylanicum)

Habit and Habitat:-

Cinnamomum zeylanicum is an evergreen tree belonging to the Lauraceae family, commonly referred to as "True Cinnamon" or "Ceylon Cinnamon." It is indigenous to Sri Lanka, the southern parts of India, and Southeast Asia. The tree generally reaches a height of 10–15 meters in its natural environment, although it is frequently pruned to a smaller size under cultivation for ease of bark harvesting.

The bark, which forms the economically valuable portion, is thin, smooth, and reddish-brown. During processing, the outer bark is removed, and the inner bark is dried to form the familiar curled quills. This inner bark is rich in aromatic compounds responsible for the characteristic flavor and fragrance of cinnamon.[11,12]

Geographical Distribution:-

Cinnamomum zeylanicum is widely cultivated across tropical regions, particularly in India, Sri Lanka, and Indonesia. It also grows naturally in southern coastal regions of western India, including Kerala and Tamil Nadu. Beyond South Asia, it is distributed in Myanmar, Malaysia, the Philippines, and parts of the Malay Peninsula, reflecting its broad ecological adaptability to warm and humid climates.[11,12]

Chemical Constituents:-

Phytochemical investigations reveal that Cinnamomum zeylanicum contains a rich diversity of bioactive compounds belonging to various chemical classes such as phenolics, terpenoids, flavonoids, and glycosides. These contribute to its multifaceted pharmacological properties.[13,14]

Major Phytoconstituents:-

The bark of Cinnamomum zeylanicum contains a diverse range of bioactive phytoconstituents, prominently featuring cinnamaldehyde and eugenol, which largely contribute to its characteristic aroma and pharmacological activities. It also comprises various terpene hydrocarbons such as α-bergamotene, α-copaene, α-thujene, and α-cubebin, along with oxygenated terpenoids including caryophyllene oxide, linalool, L-borneol, and E-nerolidol. Additional constituents such as coumarin, essential oils, tannins, mucilage, resins, glycosides, steroids, phenolic compounds, and flavonols further enrich its chemical profile and therapeutic potential. In addition to these secondary metabolites, the bark contains several essential minerals, including iron (Fe), magnesium (Mg), calcium (Ca), sodium (Na), potassium (K), chloride (Cl^-), and phosphate (PO_4^{3-}). These mineral elements contribute to its nutritional importance and enhance its relevance in both traditional and contemporary medicinal applications.[2,3,10,13,14]

Morphology:-

Macroscopic Description:-

Cinnamomum zeylanicum (Darchini) is an evergreen tree that can attain a height of up to 8 meters. The bark is thick, smooth, and light yellowish-brown in color, bearing numerous compressed twigs. The young branches and smaller parts of the plant are glabrous, while the buds exhibit a silky texture.The leaves are opposite or sub-opposite in arrangement, occasionally alternate, and are thick, leathery, and coriaceous in nature. Each leaf measures approximately 7.5–20 cm in length and 3.8–7.5 cm in width, with an ovate to lanceolate shape, a subacute or shortly acuminate apex, and an acute or rounded base. The upper surface of the leaf is smooth, glabrous, and shining, whereas the lower surface appears paler. [3,4]Leaves show 3–5 prominent main veins arising from the base, with fine reticulate venation between them. The petioles are 1.3–2.5 cm long, flattened on the upper side. The tree bears numerous small, silky to pubescent flowers arranged in loose panicles longer than the leaves.The peduncles are long, clustered, and may be either smooth or pubescent, while the pedicels are also elongated. The perianth measures approximately 5–6 mm, with a 2.5 mm long tube. The segments are oblong or slightly obovate, pubescent on both sides, and usually obtuse at the tip. [3,4]The fruits are oblong to ovoid, measuring 1.3–1.7 cm in length, and possess a dark purple hue. They are minutely apiculate, dry or slightly fleshy, and surrounded by an enlarged, bell-shaped (campanulate) perianth approximately 8 mm in diameter.[3,4]

Bark Description:-

The bark of Cinnamomum zeylanicum occurs as brittle fragments approximately 0.5 mm thick, usually in the form of single or double compound quills, densely rolled, and extending up to one meter or more in length with a diameter of around 1 cm.

- External Surface: Light yellowish-brown with faint, wavy longitudinal striations and occasional small scars or perforations.
- Inner Surface: Darker in shade with distinct longitudinal striations.
- Fracture: Splintery, revealing traces of cork.
- Odour: Pleasantly aromatic.
- Taste: Sweet, fragrant, and produces a warm sensation upon tasting.[3]

Figure 1: Darchini stem bar.

Microscopic Characteristics of Bark:-

A transverse section of the bark reveals several distinct anatomical layers:

- The outermost region (cork) comprises numerous layers of thin-walled, oval to polygonal parenchymatous cells containing yellowish-brown content.
- The cortical zone consists of alternating bands of thin- and thick-walled lignified cells, mostly rectangular or polygonal, often containing abundant starch grains, either simple or compound (with 2–4 components).
- Beneath this layer lies a 4–6 cell-thick pericyclic zone made of lignified sclerenchymatous cells, mostly isodiametric and occasionally thick-walled with narrow lumens. Numerous pits and striations (6–17) are visible.
- Pericyclic fibres, present intermittently, are hexagonal to polygonal and thick-walled.
- The phloem region contains oval fibres interspersed with large, ovoid oil cells, usually single.
- The parenchymatous cells contain starch granules (oval or sub-rectangular) with thin walls.
- Toward the pericycle, the medullary ray cells widen and are arranged in two rows, containing numerous acicular crystals of calcium oxalate or starch grains.[2]

Description of Drug in Unani Literature:-

Mahiyat (Nature and Description):-

In Unani literature, Darchini is defined as the aromatic bark of a tree, composed of thin, layered quills rolled one over another. The inner surface of the bark appears dark brown, with a sweet, sharp, and pleasantly fragrant taste. It was initially found growing abundantly in the forests of Ceylon (present-day Sri Lanka) but is now cultivated extensively in southern India.

Figure 2: Darchini leaves and tree

Varieties of Cinnamon:-

1. Reddish, hard, and thin bark — found in hilly regions and considered superior in quality.
2. Whitish and puffy bark — breaks easily from the root.
3. False cinnamon (Kazib variety) — has a curdled texture and bitter taste.

According to Dioscorides, multiple types of cinnamon exist, named according to their region of origin. The thinner variety is known as “Qurfa”, while the thicker one is called “Salikha.” In Hindi, both are referred to as “Tajj.” The finest form, “Boslon”, closely resembles Tajj and is also called “Bootitas.” The Ceylon variety is reddish, highly aromatic, and sharp in flavor, with quills 2–3 feet long, thin, soft, and straight.[15,16,17]

Mijaz (Temperament):-
The temperament (Mijaz) of Darchini, as described in classical Unani texts, varies slightly according to different authorities.

- Hot 3^0& Dry3[02,18]
- Hot 2^0&Dry 2^{07}

Af'al (Pharmacological Actions):-
According to Unani physicians, Darchini possesses the following therapeutic actions (Af'al):
The drug possesses multiple Unani pharmacological actions. It acts as a Jazib (absorbent) and Mujaffif (desiccant), helping in reducing excessive moisture. It is also Mufatteh (deobstruent) and Mohallil (resolvent), assisting in the removal of morbid matter and relieving obstructions. As a Mushtahi (appetizer) and Muqawwi-e-Meda (stomachic), it improves appetite and strengthens digestive functions, while its Muqawwi-e-Jigar (liver tonic) effect supports hepatic activity. The drug further exhibits Mudirr-e-Bawl (diuretic) and Mudirr-e-Haiz (emmenagogue) properties, promoting urine and menstrual flow respectively. It also has Daaf-e-Ta'affun (antiseptic), Daaf-e-Ishaal (anti-diarrheal), Daaf-e-Istisqa (anti-ascitic), and Daaf-e-Humma (antipyretic) activities, contributing to its therapeutic utility in various conditions. Additionally, it functions as Muqawwi-e-Asaab (nervine tonic), Muqawwi-e-Bah (aphrodisiac), and Qabiz (astringent). However, it must be noted that it also possesses Musqit-e-Janeen (abortifacient) action, requiring cautious use in pregnancy.[2,3,17,18]

Therapeutic Uses in Unani Medicine:-

1. Darchini strengthens the stomach and liver, opens their pores, absorbs excess moisture, and is beneficial in conditions like ascites.[7,8,15,18]
2. It is effective in the treatment of infections and septicemia, and when used as Surma (eye application), it helps in reducing dark circles around the eyes.[15]
3. A Tila (ointment) prepared with Darchini and vinegar is useful for acne and ulcers, while a mixture with honey benefits melasma.[8,18]
4. Darchini, along with Kurd Mana, is advantageous in the management of Bawasir (piles).[15]
5. When used with olive oil, wax, and egg yolk, it alleviates kidney and uterine pain. It also acts as:

- Mudirr-i-bawl (diuretic)
- Mudirr-i-haiz (emmenagogue)
- Musqit-i-janin (abortifacient)
- Antidote for insect and scorpion bites (with Injeer, fig).[8,18]

6. It serves as a Muqawwi-i-bah (aphrodisiac) and is useful in sexual disorders such as erectile dysfunction.[8]
7. Added to formulations for Qila-i-Maiyya (hydrocele) and Fataq (hernia).[7,8]
8. According to Bolus, it is effective in Laqwa (facial palsy), Sara'a (epilepsy), Raasa, and headache.[7,8]
9. Distillate of Darchini with Mastagi relieves hiccups.[7,8]
10. Acts as a tonic for vital organs and is beneficial in Sua'l (cough) and Ziq-un-Nafas (asthma).
11. It provides relief in Khafqan (palpitation), Wahshat (phobia or anxiety), and Junoon (mania).
12. Darchini distillate, when instilled in the ear, is beneficial for deafness.
13. Acts as a Mushtahi (appetizer) and is beneficial in Yarqan (jaundice) and Bawasir (piles).[7]

Muzirrat (Adverse Effects):-

- Harmful to the bladder and for individuals with hot temperament (MizajHaar).[8]

Musleh (Correctives):-

- Kateera and Asaroon (general correctives).[2,8]
- Sandal Safed in cases involving kidney disorders.[7]

MiqdareKhurak (Dosage):-

- 1–2 grams [2,3]
- 7–10 Masha [7]
- 7–10.5 Masha [8]

Badal (Substitutes)
i. KababChini and Zarnab[7]
ii. In inflammatory conditions: Twice the amount of Abhal or KababKhanda, or an equivalent amount of Taj[8,15,17,18]

Scientific Studies:-

Phytochemical Studies:-

Extensive phytochemical investigations on Cinnamomum zeylanicum (CZ) have revealed a rich profile of bioactive constituents. Alizadeh et al. (2020) reported that the essential oil of CZ is predominantly composed of (E)-cinnamaldehyde (71.50%), followed by linalool (7.00%), β-caryophyllene (6.40%), eucalyptol (5.40%), and eugenol (4.60%) as major components. Minor constituents included p-cymene (1.90%), α-humulene (1.70%), δ-cadinene (1.40%), α-pinene (1.30%), and limonene (1.20%).[20]Adarsh et al. (2020) demonstrated that bark extracts obtained using different solvents contained multiple classes of phytochemicals such as alkaloids, phenolics, flavonoids, saponins, tannins, proteins, carbohydrates, glycosides, and trace quantities of oils and sugars.[21]

Further, Sandamali et al. (2021) reported that the bark extract showed positive results for proteins, reducing sugars, alkaloids, tannins, polyphenols, and saponins, while being free from harmful constituents like cardenolide glycosides, cyanogenic glycosides, and anthracene derivatives.[22]The UV absorption profile of methanolic bark extract, as described by Varalaxmi et al. (2017), displayed a major peak at 220 nm, along with a minor peak at 278 nm and a sharp peak at 300 nm. The peak at 278 nm indicates the presence of phenolic compounds, and phytochemical analysis further confirmed the presence of the proanthocyanidin compound procyanidin B.[23]

A comparative phytochemical and HPTLC analysis conducted by Meena et al. (2018) on C. zeylanicum (CZ) and C. cassia (CC) showed total ash values of 4.02% and 3.1% w/w, respectively; acid-insoluble ash values of 0.26% (CZ) and 0.23% (CC); water-soluble extractive values of 6.89% (CZ) and 4.71% (CC); and alcohol-soluble extractive values of 5.83% (CZ) and 4.83% (CC). These parameters indicated the presence of sugars, acids, inorganic matter, phenols, alkaloids, steroids, glycosides, flavonoids, and other secondary metabolites.[24]

In a more detailed analytical investigation, Sivapriya et al. (2019) examined a methyl hydroxyl chalcone polymer (MHCP)–enriched fraction using FT-IR, NMR spectroscopy, and mass spectrometry. The bioactive compounds detected included ellagic acid-3-O-pentoside, afzelechin-3-O-glucopyranoside, and gallocatechin-3-O-pentoside.[25]

Pharmacological Studies:-

Antidepressant-like Activity:-

Aryanezhad et al. (2021) evaluated the antidepressant activity of Cinnamomum zeylanicum bark extract in rats. Thirty-two animals were divided into four groups (n = 8): control, depressed, and depressed groups treated with 200 or 400 mg/kg hydroethanolic extract of cinnamon (HEC). A depression-induction protocol was applied to all groups except the control. Behavioral assessments, including the Sucrose Preference Test (SPT) and Forced Swim Test (FST), were conducted. After four weeks, the prefrontal cortex was analyzed for BDNF protein and TrkB gene expression via ELISA and Real-Time PCR.Results showed that 400 mg/kg HEC significantly increased sucrose consumption and reduced immobility time in the FST by day 28. Both doses enhanced swimming time in comparison to the depressed group. Treatment also elevated BDNF levels and TrkB expression in the prefrontal cortex.[26]

Antidiabetic Activity:-

Hassan et al. (2012) validated the antidiabetic activity of an aqueous bark extract in streptozotocin (STZ)-induced diabetic rats. Three groups of six rats were used: normal control, diabetic control, and diabetic treated with 200 mg/kg of the extract for 15 days. Treatment significantly reduced total cholesterol, triglycerides, LDL, and VLDL levels, while HDL increased by 25% and tissue glycogen levels rose by 172.3%. The extract also modulated key glucose-regulating enzymes (GK, G6Pase, PEPCK, G-6-PDH, and Ins II), confirming notable antidiabetic potential.[27]

Antitumor Activity:-

Agarwal et al. (2022) demonstrated the antitumor potential of C. zeylanicum extract and its major constituent cinnamaldehyde against oral cancer cell lines (SCC-4, SCC-9, SCC-25). Both inhibited cell proliferation in a dose-dependent manner.[28]Kubatka et al. (2020) investigated the chemoprotective effects of cinnamon bark in experimental breast cancer models. Dietary administration at 0.1% and 1% (w/w) reduced tumor volume by 44% and mitotic activity by 45.5% in mice. In rats, tumor incidence decreased by 15.5% and tumor frequency by over 30%. In vitro experiments with MCF-7 and MDA-MB-231 cells confirmed its anticancer effect.[29]

Antibacterial Activity:-

Abdulrasheed et al. (2019) reported that alcoholic and aqueous extracts of C. zeylanicum showed antimicrobial activity against E. coli, S. aureus, and P. aeruginosa, with the ethanolic extract being more potent.[30]Julienti et al. (2017) evaluated alcoholic cinnamon bark extract alone and in combination with honey. The combination demonstrated an additive antibacterial effect against P. acnes and S. epidermidis, with a FICI value of 0.625, supporting its potential use in anti-acne formulations.[31] Hameed et al. (2016) analyzedmethanolic extracts using GC–MS and documented antibacterial and antifungal activities against A. flavus, P. aeruginosa, E. coli, Proteus mirabilis, S. aureus, and K. pneumoniae, with inhibition zones ranging from 0.39 ± 0.17 mm to 6.12 ± 0.52 mm.[32]

Antihypertensive Activity:-

Nyadjeu et al. (2013) assessed the antihypertensive effects of methanolic extract of C. zeylanicum stem bark (MECZ) in L-NAME-induced hypertensive rats. Intravenous doses of 5, 10, and 20 mg/kg reduced mean arterial pressure by 12.5%, 26.6%, and 30.6%, respectively. Chronic administration prevented blood pressure elevation, reduced organ hypertrophy, improved histological features, and restored nitric oxide levels. MECZ also lowered plasma triglycerides (38.1%), total cholesterol (32.1%), and LDL (75.3%), while increasing HDL levels by 58.4%. The atherogenic index decreased from 5.3 (L-NAME group) to 1.4.[33]

Antioxidant Activity:-

Ghosh et al. (2015) studied the antioxidant potential of C. zeylanicum, identifying arabinogalactan (40 kDa) as the most active fraction, followed by uronic acid and glucan. Antioxidant efficacy was evaluated using FRAP and DPPH assays, indicating strong free-radical-scavenging potential suitable for food industry applications.[34]

Cardioprotective Activity:-

Sedhighi et al. (2018) reported that alcoholic bark extract of C. zeylanicum offered cardioprotection against ischemia–reperfusion-induced arrhythmias in rats. Benefits included reduced infarct size and lower levels of cardiac injury biomarkers.[35]

Gastroprotective Activity:=

Berktas et al. (2021) investigated the gastroprotective effects of water-based extracts of cinnamon, cumin, and sumac in indomethacin-induced ulcer models. Doses ranging from 50–400 mg/kg significantly reduced ulcer area and improved antioxidant enzyme levels (CAT, SOD, MPx), glutathione (GSH) content, and lipid peroxidation (LPO). Famotidine served as the standard drug.[36]

Hepatoprotective Activity:-

Hadary et al. (2015) examined the hepatoprotective effects of cinnamon oil against paracetamol-induced liver toxicity. Rats received 150 and 300 mg/kg orally for 56 days. Both doses, similar to silymarin, significantly improved liver enzyme profiles and antioxidant markers, demonstrating notable hepatoprotection.[37]

Immunomodulatory Activity:-

Niphade et al. (2009) evaluated the immunomodulatory potential of C. zeylanicum bark extract. Oral doses of 10 mg/kg and 100 mg/kg were tested, with levamisole (2.5 mg/kg) as the reference standard. The higher dose improved neutrophil adhesion, phagocytic index, antibody titers, and serum immunoglobulin levels, while also reducing mortality induced by Pasteurellamultocida by 17%.[38]

Nephroprotective Activity:-

Gentamicin- and APAP-related Toxicity:-

Ullah et al. (2017) showed that C. zeylanicum (200 mg/kg/day) reduced urinary LDH and ALP levels in gentamicin-treated rabbits, confirming renal protection without impairing gentamicin's antibacterial efficacy against S. typhi, E. coli, P. pickettii, P. mirabilis, and M. luteus.[39]Abdeen et al. (2018) demonstrated that aqueous cinnamon extract (200 and 400 mg/kg) protected against APAP-induced renal damage by reducing oxidative stress and apoptosis. GC–MS analysis identified cinnamaldehyde, cinnamic acid, and eugenol as key active compounds.[40]

Acetaminophen-induced Nephrotoxicity:-

Qaumuddin et al. (2020) reported that 100 and 200 mg/kg ethanolic extract significantly reduced serum urea and creatinine ($p < 0.001$, $p < 0.01$) and restored uric acid and total protein levels, comparable to silymarin.[41]

Astamo et al. (2021) found that aqueous extract (200 and 400 mg/kg) ameliorated gentamicin-induced nephrotoxicity by lowering serum creatinine, urea, and uric acid levels while maintaining calcium homeostasis.[48] Qaumuddin et al. (2021) further validated nephroprotection using aqueous extract, demonstrating significant improvements in renal biomarkers in paracetamol-treated rats.[42]

CCl_4-induced Acute Kidney Injury:-

Rezagholizadeh et al. (2022) showed that cinnamon and ginger extracts, especially in combination, significantly improved renal biochemical parameters and antioxidant status in CCl_4-exposed rats, restoring levels of urea, uric acid, creatinine, total proteins, and antioxidant enzymes.[43]

Conclusion:-

Cinnamomum zeylanicum (Darchini) represents a remarkable convergence of traditional wisdom and modern science. Its versatile pharmacological profile, as documented in both Unani texts and contemporary studies, establishes it as a potent natural remedy with antioxidant, anti-inflammatory, antidiabetic, hepatoprotective, and nephroprotective properties. The phytoconstituents such as cinnamaldehyde, eugenol, and linalool contribute to its wide-ranging therapeutic actions.The nephroprotective potential of C. zeylanicum, validated through experimental evidence, supports its inclusion in formulations aimed at mitigating cisplatin- and gentamicin-induced nephrotoxicity. Furthermore, its cardio- and hepatoprotective effects suggest systemic antioxidant and detoxifying capabilities, aligning perfectly with the Unani concept of Tadbeer-e-Aaza-e-Raeesa (protection of vital organs).

By correlating ancient Unani doctrines with contemporary pharmacological findings, this review underscores the scientific legitimacy of traditional therapeutic knowledge. Future research should focus on clinical validation, isolation of bioactive compounds, and formulation of standardized Unani preparations for renal and metabolic disorders.Thus, Darchini stands as an exemplary model of integrative medicine—where age-old empirical wisdom meets the rigor of modern scientific inquiry.

Acknowledgement:-

I would like to sincerely thank to Dr. Md Mahfoozur Rahman sir, Professor in the Department of Ilmul Advia at the Govt. Tibbi College & Hospital, Patna, for his valuable guidance and continuous support during the writing of this article. His helpful suggestions, encouragement, and feedback greatly improved the quality of this work.

Author's Contribution:-

Not available

Conflict of Interest:-

Not available

Financial Support:-

Not available

References:-

1. Ranasinghe P, Pigera S, Premakumara GA, Galappaththy P, Constantine GR, Katulanda P. Medicinal properties of Cinnamomum zeylanicum: A review**.** J Tradit Complement Med. 2013;3(4):272–6.
2. Standarisation Of Single Drugs Of Unani Medicine,Part-5,Ministry of Health and Family Welfare,Department of AYUSH ,Government of India ,New Delhi ;2006:53,54,56
3. The Unani Pharmacopoeia of India,Part-1,Vol-1.New Delhi:Ministry Of Human Health And Family Welfare,Department Of AYUSH,Govt. of India 2007 ;26-27
4. Kirtikar KR, Basu BD. Indian Medicinal Plants.2ndEdition,Volume 3.Dehradun:International Book Distributors:2149
5. Atsamo AD, LontsieSongmene A, MetchiDonfack MF, Ngouateu OB, Nguelefack TB, Dimo T. Aqueous Extract from Cinnamomum zeylanicum (Lauraceae) Stem Bark Ameliorates Gentamicin-Induced Nephrotoxicity in Rats by Modulating Oxidative Stress and Inflammatory Markers. Evidence-Based Complementary and Alternative Medicine. 2021;2021(1):5543889.
6. Shahabuddin M, Idris M, Tarannum. World Journal of Pharmaceutical Research 2017;6(05):1311-1329.
7. GhaniHN.KhazainulAdvia ,3rd Edition, Volume 1.Idara kitabus shifa;2011:682-684

8. Khan MHA .Mohit e Azam,1stEdition,volume 2.Central Council For Research in UnaniMedicine,Ministry Of Health And Family Welfare,Department of AYUSH,Govt Of India ;2013:529-532
9. Ahmed R, Ahmed A, Ansari SA, Wasim M. Darchini (Cinnamon): A versatile drug in Unani system of medicine: An extensive review.
10. Parihar AK, K. Kulshrestha M, Sahu U, Karbhal KS, Inchulkar SR, Shah K, Chauhan NS. Quality control of Dalchini (Cinnamomum zeylanicum): A review. Advances in Traditional Medicine. 2023 Mar;23(1):1-0.
11. Wright, P. C., & Kerns, J. (1999). "Cinnamomum zeylanicum: Botany and Traditional Uses." Journal of Ethnopharmacology, 66(3), 213-215.
12. Bhat, R., &Bhat, M. A. (2004). "The genus Cinnamomum: A comprehensive review." ActaBotanicaHungarica, 46(1-2), 157-177.
13. Rao PV, Gan SH. Cinnamon: a multifaceted medicinal plant. Evidence-Based Complementary and Alternative Medicine. 2014;2014(1):642942.
14. Jakhetia V, Patel R, Khatri P, Pahuja N, Garg S, Pandey A, Sharma S. Cinnamon: a pharmacological review. Journal of advanced scientific research. 2010 Dec 10;1(02):19-23.
15. HublBaghdadi,AlMakhtarat fit tibb,first edition
16. MakhzanulMufradat.HKMKabeeruddin
17. IbnBitar, Aljaiulmufradat Al AdviawaAghziya.{urdu translation} CCRUM
18. Alqanoon,volume 1, part 1&2, IdaraKitabusShifa :74-75
19. Rajendrasharma,tarungupta ,encyclopedia of medicinal plants p-455-456
20. AlizadehBehbahani B, Falah F, Lavi Arab F, Vasiee M, TabatabaeeYazdi F. Chemical composition and antioxidant, antimicrobial, and antiproliferative activities of Cinnamomum zeylanicum bark essential oil. Evidence-Based Complementary and Alternative Medicine. 2020;2020(1):5190603.
21. Adarsh A, Chettiyar B, Kanthesh B, Raghu N. Phytochemical screening and antimicrobial activity of “Cinnamon zeylanicum”. Int. J. Pharm. Res. Innov. 2020 Mar 18;13:22-33.
22. Sandamali JA, Hewawasam RP, Jayatilaka KA, Mudduwa LK. Cinnamomum zeylanicumBlume (Ceylon cinnamon) bark extract attenuates doxorubicin induced cardiotoxicity in Wistar rats. Saudi Pharmaceutical Journal. 2021 Aug 1;29(8):820-32.
23. Varalakshmi B, Anand V, Karpagam T, Shanmugapriya A, Gomathi S, Sugunabai J, Suganya V, Geetha S, Sathianachiyar S. Phytochemical analysis of Cinnamomum zeylanicum bark and molecular docking of procyanidin B2 against the transcription factor nf-κB. Free Radicals and Antioxidants. 2017 Mar 1;7(2):195-9.
24. Meena AK, Narasimhaji CV, Rekha P, Velvizhi D, Ilavarasan R. Comparative preliminary phytochemical and HPTLC fingerprint profile studies of two cinnamon species commonly used in ASU formulations. Asian Journal of Research in Chemistry. 2018 Mar 1;11(2):344-50.
25. Sivapriya T, John S. Identification, isolation and elucidation of compounds from fraction of methyl hydroxyl chalcone polymer from aqueous extract of CinnamomumZeylaynicum. Asian Journal of Pharmacy and Pharmacology. 2019;5(3):582-8.
26. Aryanezhad M, Abdi M, Amini S, Hassanzadeh K, Valadbeigi E, Rahimi K, Izadpanah E, Moloudi MR. Cinnamomum zeylanicum extract has antidepressant-like effects by increasing brain-derived neurotrophic factor (BDNF) and its receptor in prefrontal cortex of rats. Avicenna journal of phytomedicine. 2021 May;11(3):302.
27. Hassan SA, Barthwal R, Nair MS, Haque SS. Aqueous bark extract of Cinnamomum zeylanicum: a potential therapeutic agent for streptozotocin-induced type 1 diabetes mellitus (T1DM) rats. Tropical Journal of Pharmaceutical Research. 2012;11(3):429 35.
28. Aggarwal S, Bhadana K, Singh B, Rawat M, Mohammad T, Al-Keridis LA, Alshammari N, Hassan MI, Das SN. Cinnamomum zeylanicum extract and its bioactive component cinnamaldehyde show anti-tumor effects via inhibition of multiple cellular pathways. Frontiers in Pharmacology. 2022 Jun 2;13:918479.
29. Kubatka P, Kello M, Kajo K, Samec M, Jasek K, Vybohova D, Uramova S, Liskova A, Sadlonova V, Koklesova L, Murin R. Chemopreventive and therapeutic efficacy of Cinnamomum zeylanicum L. bark in experimental breast carcinoma: mechanistic in vivo and in vitro analyses. Molecules. 2020 Mar 19;25(6):1399.
30. Abdulrasheed M, Ibrahim IH, Luka A, Maryam AA, Hafsat L, Ibrahim S, Maigari FU, Gidado MB. Antibacterial effect of Cinnamon (Cinnamomum zeylanicum) barkextract on different bacterial isolates. Journal of Environmental Microbiology and Toxicology. 2019 Jul 31;7(1):16-20.
31. Julianti E, Rajah KK, Fidrianny I. Antibacterial activity of ethanolic extract of cinnamon bark, honey, and their combination effects against acne-causing bacteria. Scientiapharmaceutica. 2017;85(2):19.

32. Hameed IH, Salman HD, Mohammed GJ. Evaluation of antifungal and antibacterial activity and analysis of bioactive phytochemical compounds of Cinnamomum zeylanicum (Cinnamon bark) using gas chromatography-mass spectrometry. Oriental Journal of Chemistry. 2016 Jan 1;32(4):16-25.
33. Nyadjeu P, Nguelefack-Mbuyo EP, Atsamo AD, Nguelefack TB, Dongmo AB, Kamanyi A. Acute and chronic antihypertensive effects of Cinnamomum zeylanicum stem bark methanol extract in L-NAME-induced hypertensive rats. BMC complementary and alternative medicine. 2013 Dec;13:1-0.
34. Ghosh T, Basu A, Adhikari D, Roy D, Pal AK. Antioxidant activity and structural features of Cinnamomum zeylanicum. 3 Biotech. 2015 Dec;5:939-47.
35. Sedighi M, Nazari A, Faghihi M, Rafieian-Kopaei M, Karimi A, Moghimian M, Mozaffarpur SA, Rashidipour M, Namdari M, Cheraghi M, Rasoulian B. Protective effects of cinnamon bark extract against ischemia–reperfusion injury and arrhythmias in rat. Phytotherapy Research. 2018 Oct;32(10):1983-91.
36. Berktaş ÖA, Odabasoglu F, Dumlu FA, Kutlu Z, Çadırcı E, Halıcı M, Öztürk F, Çakır A. Gastroprotective and Antioxidant Effects of the Cinnamon, Cumin, Sumac on Indomethacin Induced Gastric Ulcer in Rats. Eurasian Journal of Food Science and Technology. 2021;5(2):147-66.
37. El-hadary ae. Antioxidant and hepatoprotective effect of Cinnamomum zeylanicum oil against paracetamol induced hepatotoxicity in male rate. Journal of Agricultural Chemistry and Biotechnology. 2015 Oct 1;6(10):407-18.
38. Niphade SR, Asad M, Chandrakala GK, Toppo E, Deshmukh P. Immunomodulatory activity of Cinnamomum zeylanicum bark. Pharmaceutical biology. 2009 Dec 1;47(12):1168-73.
39. Ullah N, Khan MA, Khan S, Khan A, Ahmad W. Nephroprotective property of Cinnamomum zeylanicum and its antibacterial activity in combination with gantamicin. Pakistan Journal of Pharmaceutical Sciences. 2017 Jan 1;30(1).
40. Abdeen A, Abdelkader A, Abdo M, Wareth G, Aboubakr M, Aleya L, Abdel-Daim M. Protective effect of cinnamon against acetaminophen-mediated cellular damage and apoptosis in renal tissue. Environmental Science and Pollution Research. 2019 Jan;26:240-9.
41. Qyamuddin M, Kumar P, Kumar S, Haque MR. Nephroprotective activity of ethanolic extract of Cinnamomum zeylanicum bark against acetaminophen induced nephrotoxicity in albino rats.
42. Quamuddin MD, Kumar S, Kumar P, Iqbal K, Haqu MD. Protective effect of Cinnamomum zeylanicum aqueous extract against paracetamol induced nephrotoxicity in albino rats. The Pharma Innovation Journal. 2021;10(2):282-6.
43. Rezagholizadeh L, Ojarudi M, Moradi A, Salimnejad R, Khonakdar-Tarsi A, Matin S, Feizi I, Mohammadnia A, Mazani M. Protective effects of Cinnamomum zeylanicum and Zingiberofficinale extract against CCl4-induced acute kidney injury in rats. Physiology and Pharmacology. 2022 Jun 10;26(2):158-67.