

Available online on 15.06.2024 at <http://jddtonline.info>

Journal of Drug Delivery and Therapeutics

Open Access to Pharmaceutical and Medical Research

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Review Article

A Review of Darchini (*Cinnamomum zeylanicum*) in Unani Medicine with Therapeutic Benefits and other Pharmacological potential

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Article Info:



Article History:

Received 03 April 2024

Reviewed 06 May 2024

Accepted 31 May 2024

Published 15 June 2024

Cite this article as:

Ahmad S, Sumbul, Aleem A, Khan AA, Naseem S, Ahmad M, A Review of Darchini (*Cinnamomum zeylanicum*) in Unani Medicine with Therapeutic Benefits and other Pharmacological potential, Journal of Drug Delivery and Therapeutics. 2024; 14(6):223-229

DOI: <http://dx.doi.org/10.22270/jddt.v14i6.6645>

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Abstract

Darchini (*Cinnamomum zeylanicum*) is a bark of a cinnamon plant that belongs to the Lauraceae family. Cinnamon is a rich tasting and aromatic spice used by different cultures worldwide. Recently, many phytochemicals were discovered and obtained from *Darchini*. Numerous experimental research using these phytochemical components have established several therapeutic actions. In addition, it possesses useful medicinal properties and is considered a remedy for indigestion, flatulency, depletion of innate heat, respiratory diseases, diabetes, cardiovascular diseases, and neurological disorders. A manual literature search of classical Unani manuscripts was carried out to acquire information on temperament (*Mizaj*), pharmacological activities and medicinal applications of *Darchini*. In addition, all accessible material on phytochemical, physiochemical and pharmacological studies have been collected using an extensive review of internet sources such PubMed, Google Scholar and Science Direct. The aim of this review article is to further highlight the discovered pharmacological effect and medicinal values of *Cinnamomum zeylanicum* as per the Unani literature as well as scientific research. Based on scientific studies regarding its phytochemical components, it is beneficial for various ailments. *Darchini* also has a beneficial effect on some gynaecological disorders such as amenorrhoea, dysmenorrhoea, leucorrhoea, menorrhagia, prolapse, and vaginosis. However, there is need to conduct experimental and clinical study to validate their effectiveness and safety in humans.

Keywords: *Cinnamomum zeylanicum*, *Darchini*, Gynaecological disorders Phytochemicals, Unani system of medicine

Introduction:

In current decades, medicinal plants have been gaining wider acceptance due to the perception that these plants, as natural products, have fewer side effects and improved efficacy compared to their synthetic counterparts. *Cinnamomum zeylanicum* is one of the oldest herbal medicine and commonly used as food additive all over the world with its major use in South Asia and China. It is commonly known as cinnamon or Ceylon or True cinnamon. Cinnamon is extensively used as spice and flavouring agent in commercially available products (Toothpaste). The first medicinal use of Cinnamon was as far back as 500 BC in Egypt and parts of Europe. Cinnamon is a dried bark of the shoot grown on cut stock of *Cinnamomum zeylanicum* Blume, freed from the outer cork and underlying

parenchyma, belonging to the Lauraceae family. Everyone has probably used Cinnamon for some reason, whether for cooking purposes or medicinal purposes. Although widely used in food and pharmaceuticals, it is also important in the cosmetics and perfumery industries. Cinnamon, was considered to be used for religious purposes in some regions. Due to its unique properties, Cinnamon is often used for medicinal purposes. The essential oil from its bark is rich in trans-cinnamaldehyde, which has antimicrobial effects against animal and plant pathogens, food poisoning and bacteria and fungi that spoil. In the United States, Cinnamon is used to flavour cereals, grain-based dishes, and fruits. over 300 volatiles have been found as constituents of essential Cinnamon oils to date. The oils and extracts from Cinnamon have been established to have a

distinct antioxidant activity, which is especially attributed to the presence of phenolic and polyphenolic substances. For a long time, our ancestors have been using it as a remedy for respiratory and digestive ailments. These main properties of Cinnamon are astringent, warming stimulant, carminative, antiseptic, antifungal, antiviral, blood purifier, digestive aid, indigestion, flatulency, depletion of innate heat, respiratory diseases, diabetes, cardiovascular diseases, gynecological disorders and neurological disorders. All of these Cinnamon properties make it a good medicinal herb. Cinnamon has many common applications as medicinal products in different cultures. Some of these uses include treatment of diarrhoea, arthritis, menstrual cramps, heavy menstruation, and yeast infections. Cinnamon has traditionally been used as a medicine in many cultures for colds, flu, and digestive problems. Cinnamon is used today for many of the same traditional reasons. Cinnamon is often used as a non-essential addition to

other remedies, rather than by itself as a remedy. This is often because Cinnamon is a stimulant to other herbs and to the body that allows herbal remedies to work faster¹. Cinnamon is a dried bark of the shoot grown on the cut stock of *Cinnamomum zeylanicum* Blume, freed from the outer cork and underlying parenchyma, belonging to the family Lauraceae²⁻⁵. *Cinnamomum zeylanicum* is a medium sized evergreen, 6-10 meters high tree. It grows in rich but light soil. It requires a rainfall of nearly 200- 300 cm and temperature 32 °C. It is propagated mainly by seeds.⁵ Its inner bark is dried and rolled into quills and is called as Cinnamon. Cinnamon is a rich tasting and aromatic spice used by different cultures around the world. It possesses useful medicinal properties and considered a remedy for indigestion, flatulency, depletion of innate heat, respiratory diseases, diabetes, cardiovascular diseases, gynecological disorders and neurological disorders^{2,6}

Vernacular name: 3, 4, 7-9

Name used in other system or country or region	Vernacular name
Arabic	<i>Darsini; Qirfah-e-Sailaniyah. Shajratul Ain.</i>
English	Cinnamon. <i>Ceylon cinnamon</i> , Chinese cassia.
Hindi	<i>Darchini; Dalchini; Qalami Darchini. Dalcini, Darucini</i>
Gujrati	<i>Dalchini; Taj</i>
Persian	<i>Darchini Sailaniyah, Salikha</i> <i>Dare-chini.</i>
French	Bois de cannelle, Cannelier, Laurier cannellier.
Kannada	<i>Dalcini; Dalchini chakke.</i>
Marathi	<i>Dalchini, Darachini</i>
Sanskrit	<i>Darusita, Tvaka</i> <i>Gudatvak; Thwak; Varangam; Thracham.</i>
Tamil	<i>Cannalavangapattai; Ilavangam; Ilavangapattai; karuva; pulambilavu; sorachattorachi; Lavangapatta; karuvapattai.</i>
Urdu	<i>Darchini.</i>
Unani	<i>Qeyamooses; Qasamoos; Qausoolon; Qasamoos; Qasamooyus; Qayasoos; Qasamoobi; Qasoomas, Qoosooloon</i>

Taxonomical classification: ¹⁰

Kingdom: Plantae
 Sub kingdom: Tracheobionta
 Super division: Spermatophyta
 Division: Magnoliophyta
 Class: Magnoliopsida
 Sub class: Magnoliidae
 Order: Laurales
 Family: Lauraceae
 Genus: *Cinnamomum*
 Species: *zeylanicum*

Botanical description:

Cinnamomum zeylanicum is a moderate sized evergreen tree, 8-10 m in length and 50 cm in diameter with reddish brown soft bark, having numerous small warts. ³ Twigs are frequently compressed, and early growth is glabrous aside from the finely silky buds. Petioles are 1.3-2.5 cm long, flattened above, and the leaves are opposite or sub-opposite (rarely alternate), hard and coriaceous, ovate or ovate-lanceolate, subacute or shortly acuminate, glabrous and shining above, slightly paler beneath, and with main nerves 3-5 from the base or nearly so. Peduncles are tall, frequently clustered, glabrous or pubescent, and pedicles are long. Flowers are abundant and in lax, silky-pubescent panicles that are typically longer than the leaves. Perianth segments are pubescent on both sides, oblong or somewhat obovate, and typically obtuse. Tube is 2.5 mm long. Fruit is enclosed by an expanded campanulate perianth and is 1.3-1.7 cm long, oblong or ovoid-oblong, minutely apiculate, dry

or somewhat fleshy, and dark purple surrounded by the enlarged campanulate perianth which is 8 mm. in diameter.⁸

Habitat:

Cinnamomum zeylanicum is indigenous to the China, Indian subcontinent i.e. India, Nepal, Bhutan, Pakistan, specifically Sri Lanka, where it acquired one of its common names, Ceylon Cinnamon. It can also be grown commercially in areas like W. Peninsula, Malay Peninsula⁸ Japan, Formosa, Java, Vietnam, West Indies, Jamaica, Laos, Indonesia, Brazil, Seychelles Madagascar, Zanzibar. *Cinnamomum zeylanicum* needs a subtropical to tropical location with constant tropical sunshine and moist soil. It has been known to survive short mild frosts but nothing too prolonged, or below 32° Fahrenheit.^{5,8}

Cultivation and collection:

The elevated situation is the most favorable for the cultivation of Cinnamon. In the southern coastal regions of western India, it occurs up to an altitude of 2000 meters and in Sri Lanka, it is abundant in the regions up to 2000 meters above sea level and is fairly common up to 1200 meters. A hot and moist climate is highly suited for the cultivation of Cinnamon.

It flourishes in places with an annual rainfall ranging 150-250 cm and an average temperature of 27°C. Long stretches of dry weather are not favorable for its successful growth.

A sandy loam mixed with the decayed vegetable matter is suitable. The soil and ecological conditions have a big impact on bark quality. In Sri Lanka, Cinnamon bark of the first quality is obtained from plants raised on white sandy soil. A sandy soil mixed with humus is the best and sheltered situations up to an altitude of 500 meters are most favorable.²

Cinnamon trees are produced from seeds and coppiced when they are two or three years old, almost to the ground. The stump is left to grow about five or six shoots, which are pruned to maintain their upright position. After approximately 18 months of development, when the shoots are about 3 m long and 2 cm in diameter, they are harvested, trimmed, and after a brief period of "fermentation," the bark is removed with a nonferrous knife. The outer cork and cortex are then scraped off with a curved scraper after the peeled bark has been stretched over a suitable stick. Then, individual scraps of scraped bark are stacked one inside the other, extending the length to around 42 inches (about 106 cm). The compound quills are dried on wooden frames outside, away from direct

sunlight, before being graded, compressed, and packaged into bales weighing around 45 kg.

The traditional cinnamon grades are denoted by the following numbers: 00000, 0000, 000, 00, 0, 1, 2, 3, 4, quilling's, feathering, and chips. Nos. 1-4 grades relate to the majority of commercial materials. Small pieces make up quilling's and featherings, the latter of which frequently has some exterior bark; these materials are utilized for grinding and oil distillation. The oil produced from chips, which are primarily made up of exterior bits of bark, has a lower specific gravity and aldehyde content than oil produced from inner bark.^{11, 12}

Macroscopical Characters:

The drug consists of single or double compound quills about 6–10 mm in diameter and of varying length. In the different grades, the thickness of each piece of bark varies considerably, but in good-quality Cinnamon, it is usually not more than about 0.5 mm, the number of pieces of bark forming the compound quill varies from about 10 to 40.

Every piece has a yellowish-brown exterior with pericyclic fibers running longitudinally in wavy lines, and sporadic holes and scars that mark the locations of leaves and twigs. The inner surface is somewhat darker and longitudinally striated.

The bark breaks with a short, splintery fracture. Odour is fragrant; Taste, warm, sweet, and aromatic.^{11,13}

Microscopical characters:

Transverse section of the Cinnamon under the microscope show complete absence of epidermis and cork, rarely patches of primary cortex may be present. A pericycle made up of a continuous ring of three to four layers of sclereids with sporadic tiny clusters of pericyclic fibers inserted in it marks the outer boundary of the bark. The sclereids' thicker, lignified walls have clearly marked pit-canals. In comparison to the radial and inner tangential walls, the thickening on the outside walls is frequently less prominent. The lumen is clearly visible and sometimes contains starch. The Primary phloem cannot be distinguished. The elements that make up the secondary phloem are medullary rays, phloem fibers, and phloem parenchyma, which contains mucilage and oil cells. The phloem parenchyma is composed of thin-walled cells, with yellowish-brown walls, and contains starch in compound and simple grains.^{11,13}



Figure 1. *Cinnamomum zeylanicum* (a) Leaf (b) Bark

Part (s) used: 3, 14, 15, 16

Bark

Oil

Chemical Composition of Cinnamon:

The main compounds isolated and identified in Cinnamon (*C. zeylanicum*) belong to two chemical classes

- Polyphenols
- Volatile Phenols

Polyphenols. *Cinnamomum zeylanicum* contains vanillic, caffeic, gallic, protocatechuic, *p*-coumaric, and ferulic acids.¹⁷ Tannin, starch, mucilage^{13, 16, 18} catechine.¹⁷

Volatile Phenols.

Volatile Phenols content in *Cinnamomum zeylanicum* essential oils depends on the part of the plant from which they are extracted.

Bark; In bark, essential oil, cinnamaldehyde is the most represented substance, content ranging from 90% to 62%–73%, it depends on the type of extraction, this being higher for steam distillation compared to soxhlet extraction. The other volatile compounds are hydrocarbons and oxygenated compounds (*i.e.*, β -caryophyllene, benzyl benzoate, linalool, eugenylacetate, and cinnamyl acetate).

Cinnamon leaf; In Leaf, the main component is eugenol, acetate, and cinnamyl acetate. In Cinnamon leaf, essential oil, the main component is eugenol, in a concentration of more than 80%.

Fruit; In the essential oil obtained from Cinnamon fruits trans-cinnamyl acetate (42.00 to 54.00%) and caryophyllene (9.00 to 14.00%).

Flowers; In the essential oil obtained from Cinnamon flowers, (E)- cinnamyl acetate and caryophyllene are the major components cinnamyl acetate: 41.98%, caryophyllene oxide: 7.20%, trans-alpha-Bergamotene: 7.97%

Buds; Essential oil obtained from *C. zeylanicum* buds contains terpene hydrocarbons: 78.00%, alpha-Bergamotene: 27.38%, alpha-Copaene: 23.05%, oxygenated terpenoids: 9.00%.

Root Bark; Essential oil from root bark contains camphor 60%.^{19, 20}

Description of drug in Unani literature:**Mahiyat (Morphology):**

Darchini is a dried bark of a tree found in hilly regions. *Ibn Sina* described 4 types of *Darchini*, one is small and thick, second white, soft, and brittle, third type is black, smooth with occasional scars and holes, fourth type is greenish in color and smells like *salikha* (*Cinnamomum cassia*) and its bark is reddish. It is potent for a long duration, to increase its potency for a long period, it should be transformed in the form of pills by mixing with alcohol or honey. Aromatic, without irritation, warm taste, and blackish in color is the best and standard form of *Darchini*. Its taste is *Charpara*. On chewing its smells like *Zafran* (Saffron) and *Neelofer* (*Nymphaea lotus*, water lily). Its leaves are broad like *Sazaj Hindi* (*Tezpat*, *Cassia cinnamon*, Indian bay-leaf, Malabar leaf) and *Bedeinjeer* (Castor), and its fruits and flowers resemble the fruits and flowers of *Habbe Balsan* (*Commiphora gileadensis* L).¹⁴

Mizaj (Temperament): Hot 2, dry 3,¹⁴

Hot 2, dry 2²¹

Hot 3, dry 3^{15, 22}

Afal (Action):

Hazim (Digestive),^{14,21} *Kasir-e-Riyah* (Carminative)^{8, 14, 16,23} *Qabiz* (Astringent),^{21,23} *Mulayyin*, *Munziz Musqite Janeen*,^{14,21} *Mujaffif*^{14, 16, 21}, *Mulattif*^{14, 16, 21} *Mohallil* (Resolvent),^{14, 15, 21} *Musakhkhin* (Calorific),²¹ *Tiryaaq* (Antidote)^{14,21}, *Jali* (Detergent), *Jazib* (Absorbent),^{14, 21} *Dafa-e-taffun* (Antiseptic),^{14,23} *Muattir* (Aromatic),^{21, 23} *Muqawwi-e-Basar* (Eye tonic),^{15, 14,21} *Muqawwi-e-Aaza e Raeesa wa Bah* (Tonic for principal organs & aphrodisiac),^{8, 16, 21}

Muqawwi-e-Qalb (Cardiac tonic), *Mufarr-e-Qalb*,¹⁴ *Mufarreh e Nafs*,^{14, 21} *Muqawwi-e-Dimagh* (Exhilarant),^{21, 23} *Muqawwi-e-Meda wa Jigar* (Tonic to stomach and liver),^{14, 15, 16, 21}

Mudirr-e-Baul (Diuretic),^{14, 16, 21} *Mudirr-e-Haiz*,^{14, 21} *Muharrrik* (Stimulant),^{14, 21}

Munaffis-e-Balgham (Expectorant),^{21, 23} *Musaffi*,²¹ Hypoglycemic, Hypolipidemic, *Mufatteh-e-Sudad* (Deobsobergent).^{14, 15, 21} Analgesic,²³ Anesthetic,²³ Antiemetic,^{8, 21} Anti-lymphomic,²³ Anti-oxidant,²³ Anti-prostaglandin,²³ Antispasmodic,²³ Antipyretic,²³ Diaphoretic(*Muarriq*)²³ Fungicide,²³ Hypotensive.²³

Traditional Uses: 3, 6, 9, 12, 16, 20, 21, 23, 24, 25, 26, 27, 28

- *Darchini* is useful in *Nazla-o-Zukām*, (Coryza and Catarrh), *Sū'al-Qinya* (anaemia), *Istisqā* (Ascites), *Khafaqān* (Palpitation), Anxiety, *Māniyā* (Psychosis) and depression, *Qūlanj* (Colic), *Usr al-Bawl* (Dysuria), and *Bakhr al-Fam* (Halitosis).
- It is beneficial in diseases of brain, nerve, enhances memory, *Baroodate meda* (coldness in stomach), tremors, facial paralysis, epilepsy, fasciculation (*Ikhtilāj*, *Aankh Pharakna*), abscess, hernia, hydrocele, hoarseness of voice due to viscid *phlegm* and its decoction with *Mastagi* relieves Hiccup.
- It decreases repletion of matter in brain and stomach due to its *Mujaffif* activity and removes viscid matter from upper respiratory tract.
- It cures phlegmatic and atrabillious fevers and as coryllium increases the power of vision.
- It increases life span and prevent putrefaction of humors.
- Topical application of its paste is beneficial for gingiva and melisma, with vinegar in acne vulgaris and local use of its oil in *Waqr* (deafness) and *Waja'al-Udhun* (otalgia, earache).
- It is used as Antidote in case of insect bite, and poisons
- The bark in infusion, decoction, or powder, or oil is prescribed in bowel complaints such as dyspepsia, flatulency, diarrhea, dysentery and vomiting.
- As a stimulant of the uterine muscular fiber it is employed in menorrhagia and in tedious labour due to defective uterine contractions.
- The crystalline cinnamic acid is anti-tubercular and is used as injection in phthisis.
- A five percent oily emulsion with yolk of egg is injected in lupus.
- As a powerful stimulant Cinnamon is given in cramps of the stomach, enteralgia, toothache and paralysis of the tongue.
- The oil is locally applied with much benefit in neuralgia and headache.

- As an anti-septic, it is used as an injection in gonorrhoea.
- As a germicide, it is used internally in typhoid fever.
- Cinnamon was also used in massive doses with success in the treatment of cancer and other microbic diseases
- It is also very largely used as a spice or condiment on account of the presence of the essential oil which imparts a delicious flavor to curries.

Muḍir Atharāt (Toxic effects): 25,27

Causes headache to those with Hot temperament, toxic for kidney, bladder.

Muslih (Corrective): 7, 29, 21, 30

Kateera, Asaroon, Sandal safaid, khamira banafsha.

Miqdar e khurak (Dose):

Bark- 2-4 gm/day,²³ 1-2 gm. ¹⁸

Dried inner bark- 1-3 gm powder. ⁴

Badal (substitute): 25, 7, 21

Khulanjan, Abhal, Kababah, Kabab Chini, Zarnab, Qirfa, Post Saleekha (Taj)

Mawane Istemalat (Contraindications): 4,25, 23

Pregnancy, GI-ulcer, may reduce activity of tetracycline (WHO), People who are allergic to Cinnamon, Continued use because of mutagenicity, Stomach and duodenal ulcers. (WHO)

Murakkabat (compound formulations) 18,27,31

Jawarish-e-Jalinoos, Jawarish-e-Zarooni, Jawarish-e-Bisbasa, Habb-e-Ahmar Momyaee, Qurs-e-Mukhaddir, Dawa-ul-Kurkum, Dawa-ul-MiskMotadil-Jawahar Wali, Dawa-UI-Misk Motadil Sada, Halwa-e-Baiza-e-Murgh, Halwa-e-Gazar, Jawarish-e-Kundur, Jawarish-e-Nar Musk, Jawarish-e-Ood-Shireen, Jawarish-e-Ood-Tursh, Jawarish-e-Pudina, Jawarish-e-Utraj, Majoon-e-Dabeedul ward, Majoon-e-Falasifa, Majoon-e-Fanjnosh, Majoon-e-IspandSokhtani, Majoon-e-Jalali,Majoon-e-Jalinoos-Lului, Majoon-e-Khadar, Majoon-e-Lana, Majoon-e-Mughlliz, Majoon-e-Muluki, Majoon-e-Rahul Momineen, Majun-e-Suparipak, Majoon-e-Ushba, Tiryaq-e-Samanyiah, Roghan-e-Darchini, Arq-e-Ambar, Arq-e-Chobchini, Iyarij-e-Faiqra, Sufoof-e-Kishneez, Sufoof-e-Qaranfal.

Therapeutic uses in Gynaecological disorders:

Darchini is mentioned as *Muqawwi-e-bah* agent in Unani classical literature. This activity was validated experimentally on mice. It is also used as a *Mudir-e-haiz* agent in *Usr-e-tams* (dysmenorrhoea). If *Darchini* is put into the uterus with egg yolk has a beneficial effect on uterine disease. *Darchini* can be used as oral and in *Humool* (pessary) form have beneficial effects for uterine disease. If it is mixed with *Charbi* (fat), *Roghan-e-zaitoon* (olive), *Mom* (beeswax) and *Ande ki zardi* (egg yolk) increases its efficacy in uterine disease. If *Darchini* is used with *Murh* (*Commiphora myrrha*) as a pessary (*Humool*) exhibit *Isqat-e-janeen* (abortion). According to the *Masihi*, *Darchini* is used for uterine pain, and flatulence and to remove or as prevention of infection. According to *Ibn-e-Masooya*, it removes *sudda* (obstruction) and is useful in *Ehtebas-e-tams* (amenorrhoea) and *Usr-ul-baul* (dysuria). In *Ehtebas-e-tams* (amenorrhoea), root bark oil acts as a stimulant. *Darchini* also has a beneficial effect on other gynaecological disorders such as amenorrhoea, dysmenorrhoea, frigidity, leucorrhoea, menorrhagia, prolapse, and vaginosis.³²

Scientific Studies:

Gastroprotective activity:

Mohammed Asad evaluated gastric cyto-protective and anti-secretory effects of two doses of *C. zeylanicum* bark suspension in acetic acid induced chronic gastric, pylorus ligation induced gastric, ethanol induced gastric, stress induced gastric, indomethacin induced gastric and cysteamine induced duodenal ulcers. Ulcer Index was the common parameter chosen for all of these models. The lower dose of Cinnamon bark (10 mg kg⁻¹, p.o.) had no effect on any of the models, whereas the greater dose (100 mg kg⁻¹, p.o.) significantly reduced the formation of gastric ulcers in all the models. Cinnamon was used in high doses (100 mg kg⁻¹, p.o.) to achieve effects that were comparable to those of standard drugs. The *Cinnamon zeylanicum* (100 mg kg⁻¹ p.o.) produced an increase in healing of gastric ulcers and prevented the development of duodenal ulcers in rats indicating that it possess both gastric cytoprotective and antisecretory effects.³³

Hepatoprotective activity:

Saids. Moselhy and Huseink. H. Ali investigated hepatoprotective activity of aqueous and ethanolic extracts of Cinnamon against carbon tetra chloride (CCl₄) induced lipid Peroxidation and Hepatic injury in rats. Serum AST and ALT enzymatic activities and level of liver Malondialdehyde (MDA) were significantly increased while the activities of antioxidant enzymes superoxide dismutase and catalase (SOD and CAT) were significantly decreased in CCl₄ intoxicated rats. The elevated serum AST and ALT enzymatic activities significantly restored to near normal by oral administration of 200mg/kg of either extracts once daily for 7 days, as compared to untreated rats. The results obtained indicated that ethanolic extract has more potent hepatoprotective action than water extract against CCl₄ induced lipid Peroxidation and Hepatic injury by lowering the MDA level and elevating antioxidants enzymes activities (SOD and CAT). Free radical-scavenging polyphenol compounds may possible mechanism behind this action. The histological information gathered confirmed the hepatoprotective properties. Consequently, this extract can be used safely as part of a therapeutic regimen to treat some hepatic disorders without any side effects. ³⁴

Carminative effect:

Gases are produced during chemical reaction in the process of digestion in the acidic environment of the stomach. In an animal study the effect of dietary Cinnamon on gas formation in stomach was assessed by gastric gas profiling. The investigator found that dietary Cinnamon reduces gas formation by decreasing gastric acid and pepsin secretion.³⁵

Thermogenesis:

Juan Jiang et al stated that, by acting directly on fat cells, or adipocytes, cinnamaldehyde enhances metabolic health causing them to start burning energy via a process called thermogenesis. ³⁶

Antidiabetic effect:

Recently, the anti-diabetic effect of Cinnamon has been studied intensively by many investigators. ^{37,38}

Both in vitro and in vivo studies have shown that Cinnamon improves glucose metabolism and insulin resistance. cinnamaldehyde, one of the ingredients in Cinnamon, significantly and dose-dependently lowers the plasma glucose content of streptozotocin-induced diabetic rats. ³⁷ Regarding

the mechanism underlying these effects, Shen et al.³⁹ stated that Cinnamon extracts facilitate glucose transportation in brown adipose tissue and muscles by glucose transporter 4. Clinical studies show Cinnamon's beneficial benefits on both types 1 and type 2 diabetic mellitus.^{40, 41}

Antioxidant:

Many antioxidant components present in the methanolic extract of Cinnamon have the ability to efficiently scavenge reactive oxygen species, such as superoxide anions, hydroxyl radicals, and other free radicals, in an in vitro setting.³²

Anti-carcinogenic activity:

Darchini has some protective effects against various types of cancer, including those of the bladder, breast, colon, kidney, liver, rectum, stomach, and vagina. and a decoction of *Darchini* bark is used to treat uterine, rectal, and stomach cancer.³²

Analgesic activity:

Rajendra Kumar Swain et al studied analgesic effect by using Tail immersion and Hot plate method in swiss albino rats by using hydro alcoholic extract of *Cinnamomum zeylanicum* bark the extract was administered orally at a dose of 100,200 and 400mg/kg. The extract showed significant analgesic activity at a dose dependent manner in tail immersion method but in hot plate method, it showed significant activity in 100 and 400mg/kg body weight.⁴² A study comparing the antinociceptive effects of diclofenac and morphine with Cinnamon essential oil (CEO) was carried out in mice by Mohammad Hossein Dashti et al. They found that CEO possesses antinociceptive properties. Its potency in chronic pain inhibition was similar to Diclofenac, though its acute antinociceptive effect was reported to be less than Morphine.⁴³

Conclusion:

Darchini is a well-known spice or drug in India. Additionally, it has a number of therapeutic efficacy. Several scientific studies were carried out on *Darchini* for biochemical constituents like cinnamic acid, Cinnamaldehyde, Eugenol, and essential oils were obtained. Several *Unani* pharmacological studies have been validated. It possessed antioxidant, anti-inflammatory, analgesic, hepato-protective, anti-diabetic, anti-carcinogenic properties etc. *Darchini* also has a beneficial effect on some gynaecological disorders such as amenorrhoea, dysmenorrhoea, leucorrhoea, menorrhagia, prolapse, and vaginosis. However, it is advised to do experimental and clinical investigations to determine their effectiveness and safety in humans. Apart from experimental studies still, further detailed clinical research is required to explore the full therapeutic potential of this drug to establish it as a standard drug.

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