Potential health benefits of commonly used spices in Sri Lanka: A review

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Abstract

A spice is a dried seed, fruit, root, bark or flower of a plant or an herb used in small quantities as flavoring agent, coloring agent, food additive and preservative. Sri Lanka as a tropical island of Indian Ocean, has been famous for its quality spices since time immemorial. Globalization has made these spices easily available, and increasing their popularity. A literature search was carried out to gather the information available in the literature on selected spices in the view of part used, temperament, therapeutic action and uses, and recent scientific evidences of phytochemical analysis and pharmacological activities. All the available information was compiled from Unani textbooks and Pharmacopoeias and electronic databases such as Google scholar and PubMed. While reviewing the literature, it revealed spices are functional foods and those can be demonstrated to have a beneficial effect on the body beyond basic nutritional requirements. The active phytochemicals derived from these spices have provided the scientific basis for the pharmacological actions. Nowadays, people are increasingly interested in spice, not only to enhance the flavor of cuisine, but for the collective evidence in complementary and alternative medicine. Researches are progressing and mounting evidences which support the therapeutic benefits of spices. This study was aimed to review the potential benefits of some traditional spices commonly used in Sri Lanka.

Keywords: Spices, Phytochemical constituents, Pharmacological activities

Introduction

A spice is a dried seed, fruit, root, bark or flower of a plant or an herb used in small quantities as flavoring agent, coloring agent, food additive and food preservative. Moreover, spices stimulate appetite and create visual appeals to food. All types of spices were used from the ancient time in our kitchen daily to fulfill the body requirements on routine basis. Many of the spices are also used in traditional systems of medicines. Herbs and spices have been used for generations by humans as food and medicine. Long before modern medicine, spices were used to help individuals in disease prevention and health promotion. Traditionally spices, as part of the diets, have holistic effects on human health[1].

Since ancient times, spices had played an important role in the lifestyle of people from certain parts of the world. The history of spices from Ceylon dates back to 14th century and evidence has been revealed of the spice trade being conducted through the roman period. The western nations such as the Portuguese, Dutch and the English were attracted to the island mainly for its riches in spices, precious stones and ivory that was to be found here. Sri Lanka as a tropical island of the Indian Ocean, formally known by names such as Taprobane, Serendib and Ceylon has been famous for its quality spices since time immemorial. Globalization has made these spices easily available, and increasing their popularity. Sri Lanka being a tropical island close to the equator, the fertile and diverse soil types, varying micro climates and the favourable temperature variations, enhances the intrinsic value of most crops grown on this island[2].

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Spices have served numerous roles through history, including as coloring agents, flavoring agents, preservatives, food additives and medicine. Culinary herbs and spices are foods that are a rich source of bioactive molecules such as sulfur-containing compounds, tannins, alkaloids, phenolic diterpenes, and vitamins, especially flavonoids and polyphenols and a pigment which impart characteristic flavor and aroma and gives a herbal appeal to the food and beverages and enhances their consumer acceptability. The active photochemical constituents derived from these spices have provided the molecular basis for these actions. Further, the active phytochemical components of these herbs and spices possess wide range of functional properties and medicinal values providing several health benefits[2,3]. Recent researches have reported that bioactive constituents of spices possess the diverse range of health benefits. There is now ample evidence that culinary herbs and spices are sources of constituents that possess antioxidative, anti-inflammatory, antitumourigenic, anticarcinogenic, and glucose and cholesterol-lowering activities as well as properties that affect cognition and mood, which are actively used in preclinical, clinical, and therapeutic trials investigating new treatments of diseases[2]. Spices are functional foods and those can be demonstrated to have a beneficial effect on certain target functions in the body beyond basic nutritional requirements. This review highlights potential health benefits of commonly used spices in Sri Lanka.

Methodology

A systematic literature search was carried out to review articles and to gather the authentic information available in the literature on selected spices in the view of part used, temperament, therapeutic action and uses, and recent scientific evidences of phytochemical analysis and pharmacological activities.

Literature searches were carried out using the terms of 'Spices', 'Phytochemical constituents', 'Pharmacological activities', and 'Therapeutic uses'. All the available information on selected spices was compiled from Unani textbooks and Pharmacopoeias and electronic databases such as Google scholar and PubMed.

Inclusion criteria

- The research articles which are in English language
- Peer reviewed indexed journals
- Animal trials
- Clinical trials done in human
- Laboratory assays

Exclusion criteria

- Duplicate publications
- Not related to the medicinal uses

After a through literature review, the collected data were organized in a systematic order.

Results and Discussion

Classification of Spices[4]

Spices can be classified in several ways based on,

- Plant part used- leaves, flowers, barks, rhizomes, fruit and seeds.
- Botanical relationship- family to which it belongs.
- Longevity of spices plants- annuals, biennials and perennials.
- Morphology of aerial parts of spice plants- herbs with aerial stem, herbs with pseudo stem, climbers, shrubs, trees etc.

Parts used and Mizaj (Temperament) of the spices

Following table (Table 01) shows parts of the spices used for medicinal purposes and *Mizaj* (Temperament) of the spices.

Therapeutic actions and uses of the spices according to Unani system of medicine

Following are the therapeutic actions and uses of spices mentioned in the Unani text books

Darchini - Cinnamon

Naf 'e Khas (Actions): *Daf-e-Taffun* (antiseptic), *Jazib* (absorbent), *Muharrik* (stimulant), *Mulattif* (demulscent), *Mufatteh* (deobstruent), *Mudir-e-Haiz* (emmenagogue), *Mudir-e-Baul* (diuretic), *Muharrik-e-Bah* (sex stimulant), *Mufarreh-e-Qalb, Mufarreh-e-Dimag* (exhilarant), *Muqawwi-e-Meda*

Table 01: Parts used and *Mizaj* (Temperament) of the spices

Name of the Spice	Part used	*Mizaj*
Darchini - Cinnamon[9] (*Cinnamomum zeylanicum*)	Leaf, Stem bark	Hot and Dry 3^0
Heel Khurd/ Elachi - Cardamom[5] (*Elettaria cardamomum*)	Dried fruit, Seeds.	Hot 2^0 Dry 2^0
Filfil Aswad, Filfil Gard - Black Pepper[5] (*Piper nigrum*)	Berries	Hot and Dry 3^0
Filfil Daraz - Long Pepper[7] (*Piper longum*)	Root and fruits	Hot 2^0 Dry 2^0
Kabab Chini - Tailed Pepper/ Cubeb[6] (*Piper cubeba*)	Fruit and its oil	Hot 2^0 and Dry 2^0
Baobarang - False Black Pepper[7] (*Embelia ribes*)	Root and fruits	Hot 2^0 Dry 2^0
Kishneez – Coriander[5] (*Coriandrum sativum*)	Fruits & Leaves.	Cold and Dry (Leaves), Cold 2^0 Dry 2^0 (Fruits)
Anisoon - Aniseed[9] (*Pimpinella anisum*)	Fruit	Hot 2^0 Dry 2^0
Ajwain Desi, Nankhuah - Bishopweed[8] (*Trachyspermum ammi*)	Leaf, Fruit, Seed, Root	Hot and Dry 3^0
Zeera Siyah - Caraway[10] (*Carum carvi*)	Seeds	Hot and Dry 3^0
Karafs – Celery[7] (*Apium graveolens*)	Fruits and root	Hot 2^0 Dry 2^0 (Root & Seed)
Karafs-e-Hindi - Wild Celery[5] (*Trachyspermum roxburghianum*)	Seeds	-
Zeera Safed - Cumin[10] (*Cuminum cyminum*)	Seed, Fruit, Oil, Flower	Hot 2^0 Dry 2^0
Kalonji, Shuneez, Habbat-us-Sauda - Black Cumin[6] (*Nigella sativa*)	Fruit, Seed	Hot and Dry 2^0
Soya - Dill[9] (*Anethum graveolens*)	Fruit, Seed	Hot, Dry 2^0
Badiyan, Saunf – Fennel[7] (*Foeniculum vulgare*)	Fruits, leaves, roots and oil from fruits.	Hot 2^0 and Dry 2^0
Rai/ Khardal - Mustard[10] (*Brassica nigra*)	Seed and Seed oil	Hot and Dry
Methi/ Hulba - Fenugreek[5] (*Trigonella foenum*)	Seeds	Hot 2^0 and Dry 2^0
Qaranfal, Laung - Clove[8] (*Syzygium aromaticum*)	Flower bud	Hot and Dry
Jaiphal, Javitri/ Bisbasa – Nutmeg[7] (Arillus/Mace) (*Myristica fragrans*)	Seed, arillus (mace)	Hot 2^0 Dry 3^0
Adrak / Zanjabeel - Ginger[10] (*Zingiber officinale*)	Rhizome (raw as well as dry)	Hot 2^0 and Dry 1^0 (Fresh), Hot 3^0 and Dry 2^0 (Dry)
Lahsun – Garlic[7] (*Allium sativum*)	Bulb, oil	Hot and Dry 3^0
Chob Zard/ Haldi - Turmeric[10] (*Curcuma longa*)	Tuber, rhizome.	Hot and Dry 2^0
Tamar Hindi - Tamarind[8] (*Tamarindus indica*)	Bark, leaf, fruit and seed	Cold and Dry (Fruit)
Podina - Mint[7] (*Mentha arvensis*)	Leaves, stem	Hot 3^0 Dry 3^0
Karafs – Parsley[9] (*Petroselinum crispum*)	Root, leaf, fruit	Hot 2^0 Dry 2^0
Heeng, Hilteet - Asafoetida[5] (*Ferula asafoetida*)	The exuded gum	Hot 4^0 Dry 2^0
Zafran - Saffron[8] (*Crocus sativus*)	Flower stigma	Hot 3^0 Dry 3^0

(stomachic), *Muqawwi-e-Kabid* (liver tonic), *Muqawwi-e-Aza-e-Rayeesa* (tonic for principal organs)[9]

Afal e Khawas (Therapeutic uses): *Zof-e-Meda* (weakness of stomach), *Zeequn-Nafas* (asthma), *Sual* (cough), *Dard-e-Sar* (headache)[9]

Heel Khurd/ Elachi - Cardamom

Naf 'e Khas (Actions): *Moattar-e-Qawi* (powerful aromatic), *Muharrik* (stimulant), *Kasir-e-Riyah* (carminative), *Muqawwi-e-Meda* (stomachic), *Mudir-e-Baul* (diuretic), *Musakkin-e-Alam* (analgesic), *Mubarrid* (refrigerant), *Muhallil* (resolvent)[5]

Afal e Khawas (Therapeutic uses): *Ghasayan* (nausea), *Qai* (vomiting), *Nafakh* (flatulence), a decoction of whole cardamom together with their pericarp and jiggery added is a popular home remedy to relieve *Sadrodawar* (giddiness) caused by biliousness.[5]

Filfil Aswad, Filfil Gard - Black Pepper

Naf 'e Khas (Actions): *Muharrik* (stimulant), *Kasir-e-Riyah* (carminative), *Man-e-Naubat* (anti-periodic), *Daf-e-Humuzat* (antacid)[5]

Afal e Khawas (Therapeutic uses): Diseases of throat, pain in liver & muscles, piles, night blindness, spleen disorders, leucoderma, lumbago, chronic fevers, paralysis, vertigo, arthritis, urinary disorders, biliousness and externally used in skin diseases.[5]

Filfil Daraz - Long Pepper

Naf 'e Khas (Actions): *Hazim* (digestive), *Mudir-e-Baul* (diuretic)[7]

Afal e Khawas (Therapeutic uses): *Amraz-e-Jigar wa Meda* (liver and stomach diseases)[7]

Kabab Chini - Tailed Pepper/ Cubeb

Naf 'e Khas (Actions): *Muteeb* (aromatic), *Muharrik* (stimulant), *Daf-e-Zeequn Nafs* (antiasthmstic), *Mudir-e-baul* (diuretic), *Kasir-e-riyah* (carminative), *Musakkin* (sedative)[6]

Afal e Khawas (Therapeutic uses): *Amraz-e-Alate-Tanasul-wa-Baul* (genito urinary diseases), Like, *Itihab-e-Masana* (cystitis) & *Suzak* (gonorrhoea) as Internal *Daf-e-Taffun* (antiseptic), *Zaheer* (dysentry), *Wajul Mafasil* (rheumatism), *Munaffis-e-Balgham* (expectorant), *Muharrik* (stimulant) to the bronchial mucous membrane and oil used in throat lozenges.[6]

Baobarang - False Black Pepper

Naf 'e Khas (Actions): *Qatil wa Mukhrij Deedan-e-Ama* (vermicidal), *Mushil Balgham wa Sauda* (bilogogue)[7]

Afal e Khawas (Therapeutic uses): Used to kill and expel Deedan-e-Ama (intestinal worms)[7]

Kishneez - Coriander (Coriandrum sativum)

Naf 'e Khas (Actions): Leaves: *Musakkin* (sedative), *Dafe Humuzat* (antacid), *Dafe Humma* (antipyretic) (Internally) and *Muhallil* (resolvent)[5]

Fruits: *Kasir-e-Riyah* (carminative), *Mubarrid* (refrigerant), *Mudir-e-Baul* (diuretic) and *Mufarreh* (exhilarant)[5]

Afal e Khawas (Therapeutic uses): Leaves: Externally it is used to cure *Amraz-e-Chashm* (eye diseases), *Khuraj* (abscess) and boils. Fruits: The fruit are used in flatulence and weakness of stomach and in diarrhoea due to indigestion, It quenches excessive thirst, the drug is useful in *Malankhuliya* (melancholia) and *Khafqan* (palpitation), It is also useful in *Qurooh-e-Majra-e-Baul* (urethral ulcers) and its application checks *Nazf-ud-Dam* (bleeding) from the wounds, It is useful in the weakness of heart, stomach and brain.[5]

Anisoon - Aniseed

Naf 'e Khas (Actions): *Kasir-e-Riyah* (carminative), *Musakkin-e-Auja* (analgesic), *Munaffis-e-Balgham* (expectorant), *Mudir-e-Baul* (diuretic), *Mudir-e-Haiz* (emmenagogue), *Jali* (detergent), *Musakkin* (sedative), *Muqawwi-e-Kulya* (renal tonic), *Muqawwi-e-Bah* (aphrodisiac)[9]

Afal e Khawas (Therapeutic uses): *Zeequn Nafas* (asthma), *Nafakh e Shikam* (flatulance in the stomach), *Waja ul Meda* (stomachache), *Waja ul Uzn* (otalgia), *Islah e Meda* & *Jiger, Falij vo Laqwa* (hemiplegia & facial paralysis)[9]

Ajwain Desi / Nankhuah - Bishopweed

Naf 'e Khas (Actions): *Mushtahi* (appetizer), *Kasir-e-Riyah* (carminative), *Dafe Tashannuj* (antispasmodic), anticonvulsive, antiseptic, expectorant[8]

Afal e Khawas (Therapeutic uses): Flatulence, stomachache, atonic dyspepsia, colic, anorexia and

diarrhoea, epidemic diseases especially cholera, also used for sore throat, bronchitis and pertusis, often used as ingredient of cough mixtures, also used in antiseptic lotions and ointments.[8]

Zeera Siyah - Caraway

Naf 'e Khas (Actions): *Mulattif* (demulcent), *Muhallil* (resolvent), *Qabiz* (constipative), *Muqawwi Meda wa Ama'a wa Jigar wa Gurda* (tonic for stomach, intestine, liver and kidney), *Dafe Waram-e-Tihal, Dafe Ishal* (anti-diarrhoeal), *Muhallil-e-Awram* (anti-inflammatory), *Mudir-e-Bol wa Haiz* (diuretic and emmenagogue), *Hazim* (digestive), *Kasir Riyah* (carminative), *Mufriz-e-Sheer* (galactagogue), *Mushtahi* (appetizer) and *Muqawwi Riya* (tonic for lungs)[10]

Afal e Khawas (Therapeutic uses): *Sue Hazam* (dyspepsia), *Nafakh-e-Shikam* (flatulence), *Dard-e-Shikam* (stomachache), *Ihtebas-e-Haiz* (amenorrhoea), *Usr-e-Haiz* (dysmenorrhoea), *Qillate Laban* (oligogalactia), *Zof-e-Gurda wa Jigar* (weakness of kidney and liver), *Zof-e-Basr*, *Warm-e-Khusiya, Rua'af (Nakseer), Sailan-ur-Rahem* (leucorrhoea), *Ishal* (diarrhoea), *Kasrat-e-Haiz* (menorrhagia), *Kasrat-e-Lua'ab-e-Dahan* (excessive salivation)[10]

Karafs - Celery

Naf 'e Khas (Actions): Root & Seeds: *Mufatteh* (Deobstruent), *Muarriq* (Diaphoretic), *Mushtahi* (Appetiser), *Kasir-e-Riyah* (Carminative), *Mufattit-e-Hasat* (Lithotriptic), *Mudir-e-Baul* (Diuretic), *Mudir-e-Haiz* (Emmenogogue)[7]

Afal e Khawas (Therapeutic uses): Root & Seeds: *Zatul-Jamb* (Pleurisy), *Irqun Nisa* (Sciatica), *Nuqras* (Gout), *Wajuzzohr* (Backache), *Istisqa* (Dropsy), *Ehtebas-e-Baul* (Anuria), *Hasat-e-Kuliya wa Masana* (Kidney, Bladder calculi), *Ehtebas-e-Tams* (Amenorrhoea), It removes the *Sudda* (Emboli) form liver and resolves flatulence.[7]

Karafs-e-Hindi - Wild Celery

Naf 'e Khas (Actions): Seeds: *Kasir-e-Riyah* (carminative), *Muqawwi-e-Meda* (stomachic), *Muharrik* (stimulant), *Muqawwi-e-Qalb* (cardiac tonic) and *Mudir-e-Tams* (emmenagogue)[10]

Afal e Khawas (Therapeutic uses): The seeds are useful for flatulence, dyspepsia, vomiting, hiccough, bronchitis, asthma, and pain in bladder, A popular remedy for diarrhoea in children is an infusion of the powder made by roasting these seeds with seeds of *Holarrhena antidysenterica*, the root is regarded as a diuretic and prescribed for anasarca.[10]

Zeera Safed - Cumin

Naf 'e Khas (Actions): Flower & Seed: *Kasir-e-Riyah* (carminative), *Muteeb* (aromatic), *Muqawwi-e-Meda* (stomachic), *Muharrik* (stimulant), *Qabiz* (astringent), *Mudir-e-Laban* (galactagogue) and *Mubarrid* (cooling)[10]

Afal e Khawas (Therapeutic uses): Hoarseness of voice, dyspepsia, chronic diarrhoea and gonorrhoea[10]

Kalonji, Shuneez, Habbat-us-Sauda - Black Cumin

Naf 'e Khas (Actions): *Jali* (detergent), *Munzij* (coctive), *Mudir-e-Haiz*, (emmenagogue), *Mufiz-e-Sheer* (galactagogue), *Musqit* (abortifacient), *Muhallil-e-Waram* (ant inflammatory)

Afal e Khawas (Therapeutic uses): Used to increase lactation, in headache, *Nazla* (cold), *Sual* (cough), *Qulanj* (colic), and used to expel kidney stones

Soya - Dill

Naf 'e Khas (Actions): *Kasir-e-Riyah* (carminative), *Hazim* (digestive), gives relief in dysentery and diuretic[9]

Afal e Khawas (Therapeutic uses): Good for the pain due to cold & dry cough, it breaks kidney stone and passes them out, good for liver & spleen, plaster along with honey over stomach is good for constipation, its ash is good for wounds.[9]

Badiyan, Saunf - Fennel

Naf 'e Khas (Actions): *Muhallil-e-Waram* (anti-inflammatory), *Kasir-e-Riyah* (carminative), *Mudir-e-Baul* (diuretic)[7]

Afal e Khawas (Therapeutic uses): The root is regarded useful in *Ehtibas-e-Tams* (amenorrhoea), *Wajul Mafasil* (rheumatoid arthritis)[7]

Rai/ Khardal - Mustard

Naf 'e Khas (Actions): Seed: *Dafe Tashannuj* (anti-spasmodic), anti-rheumatic, emetic, rubefacient, and counter-irritant.[10]

Afal e Khawas (Therapeutic uses): Oil-paste: digestive condiment to induce animals in heat,

rubefacient to massage rheumatic joints, massage on chest in pneumonia.

Paste of seed: applied on chest in lung infection.[10]

Methi/ Hulba - Fenugreek

Naf 'e Khas (Actions): *Mulattif* (demulcent), *Mudir-e-Baul* (diuretic), *Mudir-e-Haiz* (emmenagogue), *Mulayyin* (laxative), *Munaffis-e-Balgham* (expectorant), *Muhallil-e-Waram* (anti-inflammatory)[5]

Afal e Khawas (Therapeutic uses): *Sara* (epilepsy), *Niqras* (gout), *Istisqa-e-Ziqqi* (dropsy), *Sual Muzmin* (chronic cough), *Izm-e-Tihal-o-Kabid* (enlargement of spleen and liver), *Waram-e-Rahem* (uteritis), decoction of seeds with honey is beneficial for *Bawaseer* (piles)[5]

Qaranfal, Laung - Clove

Naf 'e Khas (Actions): *Muqawwi-e-Aza-e-Rayeesa* (tonic for vital organs), *Muharrik* (stimulant), *Mufarreh* (exhillarant), *Muqawwi-e-Bah* (aphrodisiac), *Mukhaddir* (anaesthetic), *Musakkin-e-Alam* (analgesic), *Kasir-e-Riyah* (carminative), *Daf-e-Qai* (antiemetic)[8]

Afal e Khawas (Therapeutic uses): *Zof-e-Aza-e-Rayeesa* (Weakness of vital organs), *Qai* (Vomiting), *Nafkh-e-Shikam* (Flatulence), *Falij* (Paralysis), *Laqwa* (Facial palsy), *Zukam* (Catarrh), *Zof-e-Basarat* (Weakness of vision), *Zof-e-Hazm* (Indigestion)[8]

Jaiphal, Javitri/ Bisbasa - Nutmeg (Arillus/Mace)

Jaiphal (Nutmeg)

Naf 'e Khas (Actions): *Muqawwi-e-Meda* (stomachic), *Muqawwi-e-Bah* (aphrodisiac), *Muqawwi* (tonic), *Muhallil-e-Waram* (anti-inflammatory)[7]

Afal e Khawas (Therapeutic uses): *Ishal* (diarrhoea), *Falij* (paralysis), *Wajaul Mafasil* (arthritis)[7]

Javitri/ Bisbasa (Arillus of the Nut-Mace)

Naf 'e Khas (Actions): *Muqawwi-e-Meda* (stomachic), *Hazim* (digestive), *Kasir-e-Riyah* (carminative), *Muqawwi-e-Qalb* (cardiotonic)[7]

Afal e Khawas (Therapeutic uses): *Amraz-e-Qalb* (cardiac diseases), *Su-e-Hazm* (indigestion), *Zof-e-Bah* (sexual debility)[7]

***Adrak / Zanjabeel* - Ginger**

Naf 'e Khas (Actions): *Mulayyin* (laxative)- Dry, *Mushil* (purgative)- Raw, *Dafe Qai* (anti-emetic), *Dafe Sual* (anti-tussive), *Qatile Kirm Shikam* (vermicidal), *Kasir e Riyah* (carminative), *Hazim* (digestive), *Muqawwi-e-Bah* (aphrodisiac), *Munaffis-e-Balgham* (expectorant), *Jali* (detergent), *Muqawwi-e-Hafiza* (brain tonic), *Mushtahi* (appetizer), *Muqawwi e Meda* (stomachic), *Muqawwi e jigar* (liver tonic), *Mufatteh Sudad Jigar* (remove obstruction of liver)[10]

Afal e Khawas (Therapeutic uses): *Sue hazm* (indigestion), *Zofe Jigar* (liver debility), *Amraz-e-Barida* (balghami) (phlegmatic disorders), *Zof-e-bah* (sexual debility), *Nisyan* (dementia), *Suzak* (gonorrhea), chronic fevers, in pregnancy, in *Balghami wa Saudawi Amraz, Suaal* (cough), in *Sailanur Rahem* (leucorrhoea), backache, *Suda* (headache), *Zeequn Nafas* (asthma), *Irqunnasa* (sciatica), *Wajaul Mafasil* (arthritis), *Bawaseer* (haemorrhoids), *Istisqa* (ascites), bad breath, *Khuroojul Miqad* (rectal prolapse)[10]

Lahsun - Garlic

Naf 'e Khas (Actions): *Kasir-e-Riyah* (carminative), *Mudir-e-Baul* (diuretic), *Muharrik* (stimulant), *Muhalhil-e-Waram* (anti-inflammatory), *Qatil-e-Deedan* (anthelmintic)[7]

Afal e Khawas (Therapeutic uses): *Irqunnasa* (sciatica), *Niqras* (gout), expels out the worms, also good for stomach.[7]

Chob Zard/ Haldi - Turmeric

Naf 'e Khas (Actions): *Muhallil* (anti-inflammatory), *Kasir-e-Riyah* (carminative), *Mushil-e-Safra* (cholagogue), depurative, *Mudir-e-Haiz* (emmenagogue), *Muqawwi-e-jigar* (hepatic), *Muqawwi-e-Meda* (stomachic) and tonic[10]

Afal e Khawas (Therapeutic uses): Cold, cough, bronchitis, respiratory disorders and gastric disorder.[10]

Tamar Hindi - Tamarind

Naf 'e Khas (Actions): Fruit: *Dafe Qai* (anti-emetic), *Mubarrid* (refrigerant), *Kasir-e-Riyah* (carminative), and *Mulayyin* (laxative). Seed: *Qabiz* (constipative), retentive, impuissant to semen[8]

Afal e Khawas (Therapeutic uses): Fruit: Nausea, vomiting, fever, thirst, febrile, bilious disorders, sore throat and inflammation. Seed: Seed pulp in the form of powder is used in premature ejaculation as well as in spermatorrhoea. Seeds are adjuvant in the callus formation of fractured bones.[8]

Podina - Mint

Naf 'e Khas (Actions): *Kasir-e-Riyah* (carminative), *Hazim* (digestive), *Dafe Taffun* (antiseptic), *Mudirr-e-Baul* (diuretic), *Mudir-e-Tams* (emmenagogue), *Masakkin* (sedative)[7]

Afal e Khawas (Therapeutic uses): *Istisqa* (dropsy), *Yarqan* (jaundice), *Ehtibas-e-Baul* (anuria), *Ehtibas-e-Tams* (amenorrhoea), *Ishal* (diarrhoea), *Su-e-Hazm* (indigestion), *Nafakh* (flatulance), *Haiza* (cholera)[7]

Karafs – Parsley

Naf 'e Khas (Actions): *Mudir-e-Baul* (diuretic), *Kasir-e-Riyah* (carminative), *Mudir-e-Haiz* (emmenogogue), *Daf-e-Humma* (antipyretic)[9]

Afal e Khawas (Therapeutic uses): Used to relieve kidney and bladder calculi, used for gastrointestinal disorder, inflammation, halitosis, and amenorrhoea, leaves also are employed as antitussive[9]

Heeng, Hilteet - Asafoetida

Naf 'e Khas (Actions): *Dafe Tashannuj* (anti-spasmodic), *Muharrik-e-A'sab* (stimulant), *Kasir-e-Riyah* (carminative), *Muqawwi-e-Bah* (aphrodisiac), *Qatil-e-Kirm-e-Shikam* (anthelminthic)[5]

Afal e Khawas (Therapeutic uses): *Qoolanj* (colic), *Haiza* (cholera), when taken daily it is said to ward off attacks of malarial fever, it produces excellent effects in the advanced stages of *Zatur-Riya* (pneumonia) and *Warm-e-Sha'b* (bronchitis) in children, as *Qatil-e-Kirm-e-Shikam* (anthelminthic) in cases of *Hayyat* (round worm), Asafoetida is also a powerful nervine stimulant and is used in the nervous disorder of *Ikhtinaqur-Rahem* (hysteria).[5]

Zafran - Saffron

Naf'e Khas (Actions): *Mufarreh* (refrigerant), *Mudir-e-Baul* (diuretic), *Mudir-e-Haiz* (emmenagogue), *Muqawwi-e-Reham* (uterine tonic), *Muqawwi-e-Bah* (aphrodisiac), *Muqawwi-e-Meda* (stomachic), *Daf-e-Thashannuj* (anti-spasmodic), *Musakkin* (analgesic)[8]

Afal e Khawas (Therapeutic uses): *Zof-e-Rahem* (uterine weakness), *Zof-e-Meda* (weakness of stomach), *Qoolanj* (colic), *Ehtebas-e-Tams* (amenorrhoea)[8]

Scientific evidence of phytochemical constituents and pharmacological activities of the spices

The following table (Table 02) shows the recent scientific evidence of phytochemical constituents and pharmacological activities of the spices selected for this study.

Table 02: Scientific evidences of phytochemical constituents and pharmacological activities of the spices

Name of the Spice	Phytochemical constituents	Pharmacological activities
Cinnamomum zeylanicum	Cinnamaldehyde, Linalool, β-Caryophyllene, Eucalyptol, & Eugenol[11]	Anti-hyperglycemic activity[12] & Anti-hyperlipidemic activity[13]
Elettaria cardamomum	1, 8-Cineole, α-Pinene, Sabinene, Linalool, α-Terpineol & Nerol[14]	Antibacterial activity & Anti-inflammatory[15]
Piper nigrum	Piperine[16]	Anti-inflammatory activity[17]

Piper longum	Piperine[18]	Anti-hypertensive activity[18]
Piper cubeba	Glycosides, Alkaloids, Tannins & Phenolics[19]	Antioxidant activity[19]
Embelia ribes	Phenolics, Flavonoids, Coumarins, Fatty Acids[20]	Antioxidant activity & Anti-inflammatory[20]
Coriandrum sativum	Coriander lactone & Hydroxy coriander lactone[21]	Antioxidant & Anticancer properties[22]
Pimpinella anisum	Trans-anethole[23]	Antiproliferative activity[23]
Trachyspermum ammi	Carvone, Limonene & Dillapiole[24]	Antibacterial activity[25]
Carum carvi	p-cymene, Carvacrol & α-pinene[26]	Immunomodulatory activity[26]
Apium graveolens	Flavonoids, Tannins, Saponins & Steroids[27]	Antioxidant activity & Antimicrobial activity[27]
Trachyspermum roxburghianum	Cyclohexenone & Roxydienone[28]	Cytotoxic activity[28]
Cuminum cyminum	Sesquiterpenoids, Monoterpeneoid epimers & Chalcone[29]	Antiglycation activity[29]
Nigella sativa	Polyphenols Flavonoids, Alkaloids, Steroids, Terpenes Coumarins, Tannins & Saponins[30]	Antioxidant activity[30]
Anethum graveolens	Polyphenols, Flavonoids & Tannins[31]	Antidepressant & Analgesic effects[31]
Foeniculum vulgare	Alkaloids, Flavonoids, Tannins, Saponins & Cardiac Glycosides[32]	Antibacterial activity[32]
Brassica nigra	Tannins, Flavonoids & Alkaloids[33]	Antiproliferative Effect & Antibacterial activity[33,34]
Trigonella foenum	4-hydroxyisoleucine, Trigonelline, Isoorientin, Isovitexin, Pinitol & Sarsasapogenin[35]	Anti-diabetic activity[36]
Syzygium aromaticum	Eugenol, Beta-Caryophyllene, Alpha-Humulene & Eugenyl Acetate[37]	Antioxidant activity[37]
Myristica fragrans	Myristicin, Myristic Acid, Trimyristin, Elemicin & Safrole[38]	Anti-diabetic activity[39]
Zingiber officinale	Gingerol[40]	Antioxidant activity[40]
Allium sativum	Diallyl Disulphide, Carvone, Diallyl Trisulfide, & Allyl Tetrasulfide[41]	Neuroprotective activity[41]
Curcuma longa	Curcumin[42]	Antioxidant activity & Alpha-glucosidase inhibitory effect[42]
Tamarindus indica	Tartaric acid[43]	Antihyperglycaemic activity[43]
Mentha arvensis	Menthol & Menthone[44]	Antibacterial activity[45]
Petroselinum crispum	Apiin & Apigenin[46]	Antioxidant activity[46] & Antihypertensive activity[47]
Ferula asafoetida	Sesquiterpene coumarins & Polysulfides[48]	Neuro protective effect[49]
Crocus sativus	Crocin, Crocetin, Picrocrocin & Safranal[50]	Anti-tumour activity[51]

Conclusion

While reviewing the literature, it revealed spices are functional foods and those can be demonstrated to have a beneficial effect on the body beyond basic nutritional requirements. The active phytochemicals such as Alkaloids, Flavonoids, Tannins and Saponins etc. derived from these spices have provided the scientific basis for these actions. Recent studies have proven that the spices have numerus pharmacological activities such as Antioxidant, Anti-inflammatory, Antihyper-glycemic, Antihypertensive and Antibacterial activities etc. Nowadays, people are increasingly interested in spice, not only to enhance the flavor of cuisine, but for the collective evidence in complementary and alternative medicine. Researches are progressing and mounting evidences which support the therapeutic benefits of spices. This review validates the therapeutic actions and uses of spices mentioned in authentic Unani classical texts.

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