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Review article

Pharmacological Potential of Polyherbal Formulation, Sudarshan Churna – A Review

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Abstract

The Sudarshan Churna is a valuable Ayurvedic preparation, which was used traditionally as antimalarial, antipyretic, antiviral and antidiabetic agent. It has been given from ancient time by Vaidyas to cure all types of fever including bone fever, fever due to common cold, viral fever etc. In Sudarshan Churna, *Swertia Chirata* is present in 50% of total quantity, remaining other ingredients is in equal proportion in remaining 50% of total churna. The pharmacological activities are proven on Sudarshan Churna by different researcher are antipyretic activity, antimicrobial activity. This review helps the researcher to explode this formulation for more pharmacological activity and its safely use.

Keywords: Sudarshan Churna, Ayurveda, Fever, Antipyretic, Antimicrobial.

Introduction

Ayurveda is the most ancient science of life having a holistic health approach having a history of practice and use for over 3,000 years in Indian subcontinent. Ayurveda literally means (Ayur: Life; Veda: Science) science of life in Sanskrit, is not only a medical system but a way of life which aims at the holistic management of health and diseases widely practiced in Indian subcontinent and its concepts and approaches are considered to have been perfected between 2500-500 BC (1-3). The preparation of medicines i.e. pharmacy is an integral part of this science, and evolved from a very rudimentary form. The ayurvedic pharmaceutical preparations were evolved gradually from a simpler form to more complex forms based on plants and plant mineral combinations. Charaka Samhita contains a number of modified pharmaceutical preparations such as asava, arista, churna, avaleha, vatika, varti, taila, ghrita, lepa, mantha, arka etc (4).

India has an ancient heritage of traditional herbal medicine. With the emerging interest in the world to adopt to study the traditional system and to exploit their potentials based on different healthcare systems (5). The World Health Organization Estimates that about 80% of the populations living in the developing countries rely almost exclusively on traditional medicine for their primary health care needs (6). The use of herbal drugs for treating various diseases predates human history forms the origin of much of the modern medicine. Long before the advent of modern medicine, herbs are the mainstream remedies for nearly all ailments. People commonly diagnosed their own illness, prepared and prescribed their own herbal medicine, or bought them

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from the local medical store (7). Herbal medicines are being used increasingly as dietary supplements to fight or prevent common diseases (8).

The term churna may be applied to the powder prepared by a single drug or a combination of more drugs. If metals or minerals are used the prepared formulation is termed as bhasma or sindura. To prepare Kajjali, parada and gandhaka are mixed and other drugs are added. Drugs according to the formulation composition of the particular churna are collected, dried, powdered individually and passed through sieve number 85 to prepare a fine powder. They are mixed in the specified proportion and stored in well closed container. In general the aromatic drugs like asafoetida etc. should be fried before they are converted to fine powders. Specific care should be taken in case of salts and sugars. Formulations with hygroscopic components should not usually be prepared during rainy seasons. If so, specific precautions should be taken during storage. Churnas should be stored in air tight containers. Polyethylene and foil packing also provides damp proof protection. Special precaution for storage should be taken in cases of formulations with salts, sugars (4).

The herbal medicinal products were complex mixtures, which were originated from biological sources, great efforts were necessary to guarantee a constant and adequate quality. By carefully selecting the plant material and a standardized manufacturing process, the pattern and concentration of constituents should be kept as constant as possible, as this was a prerequisite for reproducible therapeutic results. The products were banned for consumption in the UK market include Karela tablets (made by Shriji Herbal Products), Karela capsules (Himalaya Drug Co), Yograi Guggal and Sudarshan tablets (both Zandu Pharmaceuticals), Shilajit capsules (Darbur India), SAFI liquid (Hamdard-WAKF) and Maha Sudarshan Churna Powder (supplied by Zandu Pharmaceuticals, D and K Pharmacy, Chhatrisha and Dabur, India) (9-11). The Mahasudarshan churna of Dabur and Zandhu was found to be contaminated with lead. Epidemiological studies of Ayurvedic Herbal Medicinal Products use and heavy metal toxicity in the United States and abroad are therefore warranted. Public health and community organizations should consider issuing advisories to current or previous Ayurvedic Herbal Medicinal Product users, encouraging them to consult their physicians about heavy metal screening. Physicians should also consider Ayurvedic Herbal Medicinal Products intake in the differential diagnosis of unexplained heavy metal toxicity. Current US law stipulates that regulations governing dietary supplements produced and sold domestically (DSHEA) should also be applied to dietary supplements imported into the United States (12).

The most of the traditional methods for preparation of herbo mineral complexes were very tedious and lengthy. Mass scale commercial production often tends to process a compromise that results adversely on its quality. This was the main reason of such heavy metal contaminations. The traditional preparations such as Mahasudarshan churna where metals were not the part of official formulation had shown high amount of toxic heavy metals. This was certainly a failure of the quality assurance system and a case of bad manufacturing processes. This was equally a failure of the regulatory system particularly the Indian that had not yet been able to evolve and enforce effective quality control and safety assurance of herbal medicines. Government of India had released GMPs herbal medicines that need to be implemented strictly. It will be unfair to convey a general message against ayurvedic or such traditional herbal

medicines. In fact, ayurveda or traditional medicine has nothing to do with it (13).

Traditional Uses

The dose of Sudarshan Churna is 2-4 gm. Sudarshan Churna is used to treat Yakrt (Liver), Pliha vrddhi (Splenomegaly), Jvara (Fever), Visama jvara (Intermittent fever), Jirna jvara (Chronic fever), Gulma (Abdominal Lump) (14).

The list of ingredients of Sudarshan Churna and their therapeutic uses are listed in Table1.

Table1. Ingredients and Uses of Sudarshan Churna

Sr. No.	Common Name	Latin Name	Family	Therapeutic Uses
1.	Chirata	*Swertia chirata* Buch-Ham	Gentianaceae	Antipyretic, dyspepsia, cardio stimulant, astringent, stomachic, tonic, hypoglycemic agent, anti-inflammatory, hepatoprotective, antihelmintic, anticholinergic, anticonvulsant, antimalarial, CNS depressant, hypnotic, laxative, emollient, antimicrobial activity.
2.	Patolpatra	*Trichosanthes dioica* Roxb.	Cucurbitaceae	Wound healing, intermittent fever.
3.	Prshnparni	*Ureria picta* Desv.	Leguminosae	Antimicrobial, cough, antidote, antipyretic activity.
4.	Kaliyak	*Jateorrhiza palmate* Linn.	Menispermaceae	Diarrhea, abdominal pain, verminosis, fever, emesis, nausea, infection, hypertension, bronchitis, dyspepsia, digestive atony, bitter tonic, eupeptic.
5.	Haridra	*Curcuma longa* Linn.	Zingiberaceae	Antimicrobial, gastric ulcer, skin diseases , anti-inflammatory, antitumour, antidibetic, hypotensive, vasorelaxant, larvicidal, insect repellant, anti-mutagenic, hepatoprotective activity.
6.	Davdaru	*Cedrus deodar* Roxb, Loud	*Pinaceae*	Mast cell stabilizer, Histopathology, carminative, diaphoretic, antipyretic, pulmonary and urinary disorders, rheumatism, piles, kidney stones, astringent, antihyperglycaemic activity.
7.	Vacha	*Acorus calamus* Linn.	Araceae	Antimicrobial, dyspepsia, flatulence, cough, fever, piles, asthma.
8.	Motha	*Desmodium trifiorum* DC.	Fabaceae	Antimicrobial, Anti-ulcer, carminative, lactogogue, burns, itching, diarrhea, dysentery, cataracts, rheumatism, anthelmintic activity.
9.	Harr	*Terminalia chebula*, Retz	Combretaceae	Antimicrobial, fever, cough, diarrhea, gastroenteritis, skin

				diseases, urinary tract infection and wound infections, antiviral, Typhoid fever, hepatoprotective, anti-inflammatory, immunomudulatory, antioxidant, adaptogenic activity.
10.	Duralabha	*Alhagi pseudalhagi* Bieb. Desv	Leguminosae	Antiulcer activity.
11.	Kakrasinghi	*Rhus succedonia* Linn.	Anacardiaceae	Antioxidant, anticancer activity.
12.	Kantkari	*Solanum xanthocarpum* Schrad & Wendl	Solanaceae	Asthma, cough, seminal ejaculation, anthelmintic, itching, and fever and reduce fats.
13.	Sonth	*Zingiber officinale* Willd. Rosc	Zingiberaceae	Antimicrobial, cleanses the throat , tongue, dispels cardiac disorders and cures vomiting, cough, dyspnoea, anorexia, fever, anaemia, constipation, swelling, elephantiasis, dysuria, diarrhoea, cholera, dyspepsia, neurological diseases, diabetes, eye diseases, tympanitis, rheumatism, inflammation of liver, carminative, antioxidant activity.
14.	Triman	*Legenaria siceraria* (Mol)Standl	Cucurbitaceae	Antiulcer, fever, asthma, antihyperglycemic, antioxidant, antihyperlipidemic, cardio protective, immunomodulatory, analgesic, anti-inflammatory, diuretic, cytotoxic, hepato-protective, hyperthyroidism, hyperglycemia, lipid peroxidation activity.
15.	Pittapapra	*Naregamala alata* Linn	Meliaceae	Acrid, antipyretic, splenomegaly, cough, asthma, anaemia, chronic malarial fever, emetic, expectorant.
16.	Neem chal	*Azadiracta indica* A. Juss.	Meliaceae	Antimicrobial, anti-inflammatory, immunomodulatory, antitumour, Immunostimulation activity.
17.	Pipra mool	*Piper longum* Linn.	Piperaceae	Immunomodulatory, hypocholestremic, antiinflammmatory, antiasthamatic, hepatoprotective, thrombolytic, antioxidant, myocardial infarction, antimicrobial activity.
18.	Netrabala	*Pavonia odorata* Willd.	Malvaceae	Histopathology.

19.	Kapur kachri	*Hedychium spicatum* Ham.	Zingiberaceae	Carminative, vasodilator, digestive, antipyretic, vomiting, diarrhoea, Anti-inflammatory, pain, snake bite, asthma, foul breath, bronchitis, hiccough, Vomiting, diseases of blood, tonic to brain, antioxidant, antimicrobial, antispasmolytic activity.
20.	Puskarmul	*Inula racemosa* Hook. F.	Asteraceae	Antimicrobial, hyperglyceamic, expectorant, aphrodisiac activity.
21.	Vibhitaki	*Terminalia belerica* Roxb.	Combretaceae	Antimicrobial, antihypertensive, anemia, asthma, cancer, colic, constipation, diarrhoea, dysuria, headache, anti-inflammatory, rheumatism, antidiuretic, hepatoprotective, antihypercholesterolemic, abortifacient, antinociceptive, antisecretory activity.
22.	Murva	*Marsdemia tenacissima*. Wight and Arn	Asclepiadaceae	Antifertility, anticancer activity.
23.	Amla	*Embilica officinale* Gaerth.	Euphorbiaceae	Antibacterial, antioxidant, antifungal, antiviral, aperients, aphrodisiac, chelating agent, dental problems, cough, hiccough, asthma, antidiabetic, diuretic, leucorrhoea, antipyretic, astringent, Sore eyes, anti-ascorbutic, perfumery, nausea, mouth ulcer, carminative, stomachic, headache, antigonorrhoric, diarrhea, constipation, vitamin C deficiency.
24.	Giloy	*Tinospora cordifolia* Willd.	Menispermaceae	Antimicrobial, antipyretic, diuretic, heart problems, jaundice, skin diseases, dyspepsia, antigout, antileucorrhoric, aphrodisiac, antigonorrhoric, stomachic, antispasmodic, anti-inflammatory, stimulant, diuretic, emetic, antidiabetic, antiperiodic, antileprotic, antirheumantic and tonic.
25.	Kutki	*Picrorrhiza kurrora* Benth.	Scrophulariaceae	Antimicrobial, anti-inflammatory, immunomodulatory, dyspepsia, antipyretic, liver diseases.
26.	Chitrak-	Plumbago zeylanica	Plumbaginaceae	Diarrhea, dysentery, abdominal disorders, peptic ulcers, piles,

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		Linn.		splenomegaly, hepatomegaly.
27.	Sagine	*Moringa oleifecalam* Lam.	Moringaceae	Antimicrobial, anticancer, bronchitis, antipyretic, anti-anemic, anti-hypertensive, cardiotonic, antidiabetic, hypoglycemia, diuretic, dysentery, diarrhea, astringent, gout, splenomegaly.
28.	Satawari	*Asparagus racemosus* Willd.	Liliaceae	Antimicrobial, gastric ulcer, dyspepsia, anti-inflammatory, immunomodulatory, antihepatotoxic, antineoplastic, aphrodisiac activity.
29.	Daruharidra	*Berberis aristata* DC.	Berberidaceae	Antimicrobial, anti-inflammatory, cardioprotective, immunostimulation, anticancer, jaundice, antipyretic, analgesic activity.
30.	Patanga	*Didymocarpus pedicellata* Willd.	Gesneriaceae	Diuretic, antiurolithiatic activity.
31.	Padma Kath	*Nelumbeum speciosum* Willd.	Nelumbonaceae	Antimicrobial, neurutropic, cardiotonic, dysentery, piles, antidibetic activity.
32.	Chir	*Pinus roxburghil* Sarj.	Pinaceae	Antimicrobial, diuretic, rubifacient, vermifuge, antirheumatic activity.
33.	Kush	*Andropogon muricatus* Retz.	Gramineae	Antiallergic, antispasmodic, diuretic, antipyretic activity.
34.	Dal Chini	*Cinnamon cassia* Blume.	Lauraceae	Antimicrobial, stimulant, carminative, antidiabetic, immunomodulatory, antioxidant, anti-inflammatory, antifungal, hypoglyceamic activity.
35.	Tejpatra	*Cinnamomum inners* Reinw.	Lauraceae	Carminative, stimulant, antipyretic, antirhumatic, diuretic, diaphoretic, deobstruent and lactagogue.
36.	Shal Parni	*Desmodium gangaticum* DC.	Leguminosae	Antimicrobial, abortifacient, diuretic, cardiotonic, expectorant, febrifuge, tonic, sedative, fever, chronic fever, cough.
37.	Azwoin	*Ptychotis coptica* DC.	Umbelliferae	Antispasmodic, stimulant, carminative, sore throat, bronchitis, antiseptic, antifungal, insecticide, anthelmintic activity.
38.	Atis	*Aconytum heterophullum* Wall.	Ranunculaceae	Antimicrobial, antidiarrheal, antidysentric, anti-inflammatory, antirheumatic, antiviral activity.
39.	Bilva	*Aegle*	Rutaceae	Anticancer, antimalarial,

		marmelos Corr.		antibacterial, antimicrofilarial, antihyperlipidaemic, dysentery, cholera, constipation, antidiabetic, anti-inflammatory, antipyretic, analgesic, insecticidal, spermatorrhoea, antiepileptic, antileprotic, antiperoxidative, antiprotozoal, antiproliferative, antiulcer, cardiotonic activity.
40.	Kali Mirch	*Piper nigrum* Linn.	Piperaceae	Antiasthmetic, cough, heart diseases, throat inflammations, night blindness, urinary disorders, tooth and muscle aches, anti-inflammatory, snake bites, eye diseases, cholera, purgative, an antidote for poisons, aphrodisiac, analgesic, muscle relaxant, digestive stimulant, antiseptic, diuretic, sudorific, anxiolytic and hypnotic activity.
41.	Kurchi	*Holarrhena antidysentrica* Wall.	Apocynaceae	Antibacterial, diarrhea, dysentery, antipyretic, antioxidant, antifungal activity.
42.	Mulethi	*Glycyrrhiza glabra* Linn.	Leguminosae	Antimicrobial, tonic, laxative, demulcent, emollient, cough, catarrh, bronchitis, antipyretic, gastritis, antiulcer, hepatoprotective, anti-oxidant, anti-viral anti-mutagenic, anti-inflammatory, anti-obesity activity.

Pharmacological Activities:

Antipyretic activity

Swertia chirata is key ingredient in Sudarshan churna (15). The Aqueous extracts of Sudarshan churna was evaluated for antipyretic activity using two models including hyperpyrexia-induced in rats by brewer's yeast and another one hyperpyrexia induced in rabbits by Typhoid-Paratyphoid A, B vaccine. Like Paracetamol (100 mg/kg, p.o.), Sudarshan churna, showed significant reduction in elevated body temperature at 200 mg/kg, p.o. Sudarshan churna is used traditionally as antimalarial, antipyretic, antiviral and antidiabetic formulation. It is recomended for all types of fever including bone fever and common cold etc (16). All ingredients have different therapeutic uses which support to treat the malaria and other fevers and are useful for rejuvenating the body. *Swertia chirata* is specifically antimalarial and antipyretic herb (17). Dose of Sudarshan churna is 3-6 gm b.i.d. as antipyretic and 1-2 gm b.i.d. as antidiabetic agent. Literature survey revealed that SC is most useful as well as popular Ayurvadic medicine to cure malaria and other fevers(18). Churna was prepared according to Ayurvedic literature (19).

Antimicrobial activity

Aqueous extract of Sudarshan Churna traditionally used in treatments of viral infection, viral fever and malaria. The aqueous extract of polyherbal formulation SC possesses significant antimicrobial

activity also. The aqueous extract of Sudarshan churna was found active against the gram-negative bacteria *Klebsiealla pneumoniae, Escherichia coli*, and gram-positive bacteria *Staphylococcus aureus, Proteus vulgris* and found less effective against gram-positive bacteria *Staphylococcus epidermidis and Bacillus subtilis.* The ASC shows significantly less effect against *Candida albicans*. Sudarshan Churna contains 42 different constituents including 50% of Swertia chirata Buch Ham and the formulation is described in the ancient ayurvedic literature. A survey on the activities of the constituents revealed that *Swertia chirata, Ureria picta, Curcumma longa, Terminalia chebula, Asparagus racemosus, Acorus calamus, Zingiber officinale, Azadiracta indica, Glycerrhyza glabra* are reported to be effective as antimicrobial herbs (20-24). SC contains flavonoids and sterol, which may responsible for antimicrobial activity (25-28).The several herbal and herbal combinations in ayurveda e.g. Sudarshan Churna, neem, turmeric, berberis and sandalwood appear to have antibacterial activity (29).

Herbal preparations were not only supplement the diet but also help in preventing enteric infections. Ayurvedic Herbal preparations like Triphala churna (Baidyanath), Haritaki churna (Ayurveedya Arkashala) Mahasudarshan churna (Baidyanath), and Lavanbhaskar churna (Baidyanath) extracts had great potential as antimicrobial activity against enteric pathogens and that they can be used in the treatment of infectious diseases. The Aqueous extract of Mahasudarshan churna shows no antibacterial activity. Where, the Acetone, Ethanol and Methanol extract of Mahasudarshan churna shows highest antibacterial potential against *Staphylococcus epidermidis*, *Staphylococcus aureus* and *Proteus vulgaris*, it was mild antibacterial activity against *Bacillus subtilis, Klebsiella pneumonia, and Salmonella typhimurium* (30).

Conclusion

Current world-wide interest in traditional medicine has led to rapid development and studies of many remedies employed by various ethnic groups of the world. Sudarshan churna is a very potent ayurvedic medicine having antipyretic activity, antimicrobial activity, in splenomegaly, antimalarial activity, antiviral activity, antidiabetic activity. So this review explains the potential of this formulation and help researcher to explore more therapeutic potential of this formulation as it has more therapeutic properties which are not known.

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