

Review Article

Antimicrobial Potential of Polyherbal Formulation Tiktadya Ghrutam - A Review

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ABSTRACT

Tiktadya ghrutam is a Polyherbal ayurvedic preparation which is used for topical application in all types of wounds in ayurveda tiktadya ghrutam is an extremely useful as wound healer as it possesses antimicrobial activity. It is also useful in various skin afflictions.

This formulation chiefly contains the plants *Curcuma longa*, *Azadirachta indica*, *Jasminum auriculatum*, *Pongamia glabra*. This review explains the antimicrobial potential of each ingredient present in this polyherbal ayurvedic formulation and needs a scientific exploration so as to document its therapeutic effectiveness.

KEY WORDS: Tiktadya ghrutam, Antimicrobial, Ayurveda, Wounds, Formulation

INTRODUCTION

Ayurveda, which literally means the science of life, is one of the oldest systems of medicines in India. In Ayurveda, the disease treatment is employed to regain the balance of basic elements and functional principles of the body. [1] Charaka Samhita contains a number of modified pharmaceutical preparations such as Asava, Arista, Churna, Avaleha, Vatika, Varti, Taila, Ghrita, Lepa, Mantha, Arka etc. Ghrutas are preparations in which ghruta is boiled with prescribed liquid media [Svarasa etc.] and a fine paste [Kalka] of the drugs specified in the formulation composition. Unless specified otherwise Ghruta means Goghruta. The medicated ghruta will have the odour, colour and taste of the drugs used in the process. Ghrutas are preserved in good quality of glass, steel or polythene containers.

These medicated preparations retain the therapeutic efficacy for 24 months. [2] Microorganisms are ubiquitous in nature and are vital components in the cycle of Life. The majority are free living organisms growing on dead or decaying matter whose prime function is the turnover of organic materials in the environment. The microorganisms include Bacteria, Fungi & Viruses. [2] Those agents which are used to kill or inhibit the growth of microorganisms are called Antimicrobial agent (AMA). These can be synthetic or natural. [4]

GENERAL DESCRIPTION

The ingredients of tiktadya ghrutam are rhizome of Haridra (*Curcuma longa* L.), Leaf of Jati patra (*Jasminum aurichulatum* Vahl.), Leaf of Neem patra (*Azadirachta indica* L.), Leaf of Patola patra (*Trichosanthes dioica* Roxb.), Leaf

of Karanja (*Pongamia glabra* L.), Root of Yashti madhu (*Glycyrrhiza glabra* L.), Rhizome of Katuki (*Picrorhiza kurroa* Royle ex Benth), fruit/Seed of Karanja (*Pongamia glabra* L.), Madhuchchhisht (Beeswax of *Apis indica*), ghruta . Water. [5]

Description of ingredients

Curcuma longa L. *Curcuma longa* [Zingiberaceae] is a medicinal plant commonly known as 'Turmeric. The herb turmeric possesses the properties like antioxidant, anti-inflammatory, anti-platelet, cholesterol lowering antibacterial and anti-fungal effects. It contains a mixture of powerful antioxidant phytonutrients known as curcuminoids and inhibits cancer at initiation, promotion and progression stages of tumor development. [6,7] It is a strong anti-oxidant, which supports colon health, exerts neuroprotective activity and helps to maintain a healthy cardiovascular system. [6] The plant is used to treat jaundice, gastric ulcer, diabetes [8,9,10,11] The Larvicidal and insect repellent property of the plant extract was also reported. [12,13] *Curcuma longa* rhizome extracts were evaluated for antibacterial activity against pathogenic strains of Gram-positive (*Staphylococcus aureus*, *Staphylococcus epidermidis*) and Gram-negative (*Escherichia coli*, *Pseudomonas aeruginosa*, *Salmonella typhimurium*) bacteria. [14]

Jasminum auriculatum Vahl. The *Jasminum auriculatum* [Oleaceae] is a small herb found in south India and the western peninsula. The alcohol free defatted extract of *Jasminum auriculatum* leaves has been reported to contain lupeol and jasminol. [14] Juice of leaves of *Jasminum auriculatum* has been shown to be beneficial in wound healing. The plant reports antioxidant and antibacterial activities of the essential oils. [16] The plant is documented to possess beneficial effects as aphrodisiac, antiseptic, emollient, antihelminthic, deobstruant,

suppurative, leprosy, skin diseases, wounds, corns, aromatherapy.

Pharmacological activities of the plant reported so far are antimicrobial, antioxidant, antiulcer, cytoprotective, chemoprotective, wound healing and anti-acne activity. The various ethnobotanical and traditional uses as well as phytochemical and pharmacological activities reported so far from *J. grandiflorum* and this plant is one of the important ingredients of tiktadya ghruta. [5]

Azadirachta indica L. The *Azadirachta indica* [Meliaceae] is a herbal plant widely distributed in our subcontinent during all seasons. Each part of neem tree has some medicinal property. Neem leaf, bark extracts and neem oil are commonly used for therapeutic purpose. [17] Neem oil suppresses several species of pathogenic bacteria such as *Staphylococcus aureus* and *Salmonella typhosa*, all strains of *Mycobacterium tuberculosis* (MTB). [18,19] The growth of *Salmonella paratyphi* and *Vibrio cholerae* was inhibited. [20] Efficacy of NIM-76, a spermicidal fraction from neem oil was investigated for its antimicrobial action against certain bacteria, fungi and poliovirus as compared to whole neem oil. Available antimicrobial agents can control the infection but they are expensive and rapid emergence of anti-microbial resistance. Neem may be used for its easy availability and significant effect against bacteria. The neem tree is still regarded as 'village dispensary'. [21] The ethanolic extract of *Azadirachta indica* showed high inhibitory activity against *Escherichia coli*. [22]

Trichosanthes dioica Roxb. The *Trichosanthes dioica* [Cucurbitaceae] is a well-known plant in the traditional medicine. Based on its traditional use, methanolic extract of the plant was selected for assessment of healing potential in the form of simple ointment using full thickness burn wound

model in rats. The effect produced by the extract ointment showed significant healing when compared with the control and standard groups. [23] It is used for overcoming constipation, fever, skin infections and wounds; seeds of the plant are also used as Antihyperglycemic agent. [24]

Pongamia glabra L. The plant *Pongamia glabra* [Leguminosae] is locally known as karanja, is a mangrove plant. Traditionally, its bark is used in pile, leaves are effective as medicated bath and rheumatic, pains, seeds are used in hypertension, bronchitis, whooping cough, skin diseases and rheumatic arthritis, roots are effective in fistulous sores and gonorrhoea and having antimicrobial activity. [25]

Glycyrrhiza glabra L Licorice, [Fabaceae/Papilionaceae] is a plant with a rich ethnobotanical history. The roots are used as a folk medicine both in Europe and in Eastern countries. The root of *Glycyrrhiza glabra* is a traditional medicine used mainly for the treatment of peptic ulcer, hepatitis C, pulmonary and skin diseases, although clinical and experimental studies suggest that it has several other useful pharmacological properties such as anti-inflammatory, antiviral, antimicrobial, antioxidative, hepatoprotective and cardioprotective effects. [26]

Picrorhiza kurroa Royle ex Benth [Scrophulariaceae]. Different pharmacological activities of *P. kurroa* include anti-microbial, anti-oxidant, anti-bacterial, anti-mutagenic, cardio-protective, hepato-protective, anti-malarial, anti-diabetic, anti-inflammatory, anti-cancer, anti-ulcer and nephro-protective activities were recorded from this plant. [27] Rhizome of the plant is also used in treatment of high blood pressure, intestinal pain, eye disease, gastritis, bile disease, sore throats, blood, and lung fever. [28] It is considered a bitter tonic, used as a cholagogue (promoting the flow of bile from the gall bladder),

stomachic (stimulating gastric activity) and cathartic (purgative). [29]

Bees wax is obtained from the honey comb of the bees *Apis indica* and some other species like *A. mellifera* [Apidae]. [30] Beeswax is a tough, waxy substance that honey bees produce and secrete in thin scales to be used in the formation of honeycomb, the cellular wall of the beehive. Beeswax is used to make fine candles, shoe polish, soap, skincare products, modelling waxes and other products. It is safe to ingest and used as a coating for pills as well as a solidifier for many candy products. Beeswax is known for its high melting point range, of 62 - 64°C (144 - 147°F). [31]

Ghruta, Cow's ghee has been reported to exert significant wound healing activity. Its antifungal activity has also been shown to be independent of any antibiotic or antifungal agent, which may be included into the formulation. Ghee contains several saturated and unsaturated fatty acids which are capable of taking part in metabolic processes involved in any wound healing. It seems therefore worthwhile that the cow's ghee is explored further as an effective clinical agent. [32]

CONCLUSION

Pharmacological activities of ingredients of *tiktadya ghrutam* has shown its use as antimicrobial qualities proved scientifically. The phyto-medicinal therapy is easy to procure and administer with minimal side effects. So this suggests that the *tiktadya ghrutam* may be having antimicrobial activity, which must be the area of interest for the scientists to explore this Ayurvedic formulation for therapeutic potentials. So this review helps the researcher to explore this formulation for pharmacological activities of the *tiktadya ghrutam*.

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How to cite this article: Gupta D, Saini SL, Sharma T. Antimicrobial potential of polyherbal formulation tiktadya ghurutam - a review. International Journal of Research and Review. 2017; 4(10):29-33.

