



Review of Perspiration: A Detailed Study of Microbes

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ABSTRACT

Perspiration is the process which takes place in the human body and tends to produce a bad odour due to the deposition and break down of microorganism in the perspired area. In perspiration the bad odour was caused by the microorganism like staphylococcus and candida species, an antiperspirant is a therapeutic agent which eradicates the bad odour. We concluded that the combination of herbs had a better antimicrobial activity than the individual herb, which possess the synergistic effect. Here the few herbals which possess anti-microbial activity which can be formulated as a therapeutic agent which is known as antiperspirant. From this article we enlighten that herbal plants have a good anti-perspirant effect. In future with new varieties of developments were taken to launches as formulations.

KEYWORDS Perspiration, Microorganisms, Herbs, Synergistic, Formulation.

Received 10.03.2017

Revised 12.04.2017

Accepted 08.05.2017

INTRODUCTION

Perspiration is otherwise called as sweating or diaphoresis [1]. It is the secretion of body fluids by the sweat glands present in the skin layer of human body. [2]. There are two types of glands present in which eccrine and apocrine glands. In human beings the perspiration is based on the thermoregulation process, on hot climatic condition the body and the skin layer were get heated so sweat gland secret sweating. On cold climatic condition its get reversed. After puberty both males and females had more perspiration [3, 4]. The excessive sweating is the state of Hyperhidrosis and moderate level of perspiration is Focal hyperhidrosis condition. [5]. The process of perspiration and its significant effect was reviewed and this effect was eradicated by the plants herbals due to its anti-microbial activity.

CAUSES

Diaphoresis is an untellable symptom is due to physical exertion, menopause, and fever, ingestion of toxins substance, and high environmental temperature, emotions (anger, fear, and anxiety). It is based on regulation of autonomic nervous process especially sympathetic and para-sympathetic balance.[6]. Other diseases condition like in following are Hyperthyroidism, Excess body weight, cardiovascular diseases, renal failure, Diabetes, Fever, and Malaria.

COMPOSITION OF PERSPIRATION

It is consist of water, minerals, lactic acid, and urea. The mineral content has sodium (0.9 g/l), potassium (0.2 g/l), calcium (0.015 g/l), and magnesium (0.0013 g/l).[7]. Some trace elements are excreted in sweat they are zinc (0.4 mg/l), copper (0.8 mg/l), iron (1mg/l), chromium (0.1mg/l), nickel (0.05mg/l), and lead (0.05 mg/l).[8, 9].

MICROORGANISMS IN PERSPIRATION

The microorganisms are present in the sweating fluid are enlisted below the Table No:1.

TABLE NO:1

S.NO	MICROORGANISMS.	CAUSES FOR BAD ODOUR.	REFERENCES
01	<i>Corynebacterium.</i>	It's mainly produce lipase enzymes which form butyric acid in sweating leads to bad odour.	[10]
02	<i>Staphylococcus hominis.</i>	It has thio-alcohol compounds leads to bad odour.	[10]
03	<i>Propionibacteria.</i>	It break-down the amino acid in the sweating fluid.	[11]
04	<i>Staphylococcus epidermis.</i>	It mainly produces an iso-valeric acid which causes bad odour.	[11]

ANTI-PERSPIRANTS & DEODORANTS MECHANISMS

The main mechanism is that anti-per spirant and deodorant agent were mainly precipitate the muco polysaccharides and dampen down the opening site of sweat gland and block the sweating. [12]. Deodorant is the agent which is applied into the body to prevent bad body odour caused by the bacterial breakdown that tends to perspiration in armpits, feet, and other areas of the body. A division of deodorant is antiperspirants which prevent sweating by affecting sweat glands. It is mainly applied in the underarms, feet or other areas in the body as body sprays. [13]

LITERATURE REVIEW**PREVALANCE OF HEAT AND PERSPIRATION DISCOMFORT INSIDE THE PROSTHESES**

Heat mechanisms are exhibited by convection, conduction, radiation, evaporation which was distributed to a socket barrier it is known as prostheses placed in the humans. Due to the thermal, people was affected with limb amputation and leads to skin irritations. Poor ventilation and excess thermal introduced leads to perspiration. Based on thermoregulatory process perspiration effect in prostheses. [14].

MARKET AVAILABLE FORM OF HERBALS PRODUCTS

The herbals are enlisted in the marketing and exporters mainly Rajasthan herbal international is Namira and Javadhu powder. These are mainly involve in maintain the body odour and prevents sweating. These products are not well established and not famous. But also these are the herbal preparation are existing alone. Even though these herbal preparations are produce a little effect in people a new innovation is need for the anti-perspirant preparation by using herbal plants.

HERBAL THERAPY FOR PERSPIRATIONS

From the natural origins the herbals are mainly use to have an apparent effect against perspirations. In perspiration, bad body odour is produced by the continuous deposition of microorganisms. The microorganisms like *Corynebacterium*, *Staphylococcus*, *Candida albicans*, etc. are responsible for the bad odour in the body. It is one of the skin infections by bacterial and fungal microorganisms. Some of the herbal plants have better effect on these microorganisms and they are enlisted in followings along with their vernacular names.

ETHNOBOTANICAL VIEW OF HERBAL PLANTS***Cassia fistula*****SCIENTIFIC CLASSIFICATION**

Kingdom: Plantae.
Order: Fabales.
Family: Fabaceae.
Genus: Cassia.
Species: Cassia fistula.

SYNONYMS [15]

- *Bactrylobium fistula* Wild.
- *Cassia bonplandiana* DC.
- *Cassia excels* Kunth.
- *Cassia fistuloides* Collad.
- *Cassia rhombifolia* Roxib.
- *Cathartocarpus excelsus* G Don.
- *Cathartocarpus fistula* Pers.
- *Cathartocarpus fistuloides* (Collad) G Don.
- *Cathartocarpus rhombifolius* G Don.

VERNACULAR NAMES [16]

Hindi: Amaltas.
Tamil: Konrai.
Telugu: Raela.
Kananda: Kakke.
Malayalam: Kanikkonna.

Azadirchata indica**SCIENTIFIC CLASSIFICATION**

Kingdom: Plantae.
Order: Sapindale.
Family: Meliaceae.
Genus: Azadirchata.
Species: Azadirchata indica.

SYNONOMUS [15, 17].

- *Azadirchata indica* var. *minorvaletton*.
- *Azadirchata indica* var. *siamensis valetton*.
- *Azadirchata indica* subsp. *Vartakii* Kothari, Londhe & N.P. Singh.
- *Melia Azadirchata* L.
- *Melia indica* (A. Juss.) Brandis.

VERNACULAR NAMES [18]

Hindi: Neem.

Tamil: Veppai.

Telugu: Vepa.

Kananda: Bevu.

Malayalam: Aryaveppu.

Aloe Vera

SCIENTIFIC CLASSIFICATION

Kingdom: Plantae.

Order: Asparagales.

Family: Asphodelaceae.

Genus: Aloe.

Species: Aloe Vera.

SYNONYMUS [18]

- *Aloe barbadensis* Mill.
- *Aloe barbadensis* var. *chinensis* Haw.
- *Aloe chinensis* (Haw) Baker.
- *Aloe elongate* Murray.
- *Aloe flava* Pers.
- *Aloe indica* Royle.
- *Aloe lanzae* Tod.
- *Aloe maculata* Forssk.
- *Aloe perfoliata* var. *Vera* L.
- *Aloe rubescens* DC.
- *Aloe variegates* Forssk.
- *Aloe Vera* Mill.
- *Aloe Vera. Chinesis.*
- *Aloe Vera. Lanzae.*
- *Aloe Vera littorals.*
- *Aloe vulgaris.*

VERNACULAR NAMES [19]

Hindi: Gwar patta.

Tamil: Katrazhi.

Telugu: kalanbanda.

Kananda: Brahmi.

Malayalam: Ctevala.

Plectranthus amboinicus

SCIENTIFIC CLASSIFICATION

Kingdom: Plantae.

Order: Lamiales.

Family: Lamiaceae.

Genus: Plectranthus.

Species: Plectranthus amboinicus.

SYNONYMUS [18]

- *Coleus amboinicus*.
- *Coleus aromaticus*.

VERNACULAR NAMES [18]

Hindi: Patta ajawin.

Tamil: Karpuravalli.

Telugu: Karuveru.

Kananda: Karpoora valli.

Malayalam: Kanikkurukka.

Tridax procumbens

SCIENTIFIC CLASSIFICATION: [18.]

Kingdom: Plantae.
 Order: Asterales.
 Family: Asteraceae.
 Genus: *Tridax*.
 Species: *Tridax procumbens*.

VERNACULAR NAMES [18]

Hindi: Ghamra.
 Tamil: Veetukaaya poondu.
 Telugu: Gayapaaku.
 Kananda: Jayanthi.

Ocimum tenuiflorum

SCIENTIFIC CLASSIFICATION

Kingdom: Plantae.
 Order: Lamiales.
 Family: Lamiaceae.
 Genus: *Ocimum*.
 Species: *Ocimum tenuiflorum*.

SYNONYMUS [15].

- *Geniosporum tenuiflorum* (L) spreng.
- *Lumnitzera tenuiflora* (L) spreng.
- *Moschosma tenuiflorum* (L) Heynh.
- *Ocimum anisodourum* F.Muell.
- *Ocimum caryophyllum* F.Muell.
- *Ocimum hirsutum* Benth.
- *Ocimum inodourum* Burm.F.
- *Ocimum monachorum* L.
- *Ocimum sanctum* L.
- *Ocimum scutellarioides* Wild ex Benth.
- *Ocimum subserratum* B.Heyne ex Hook.F.
- *Ocimum tomentosum* Lam.

VERNACULAR NAMES [18]

Hindi: Tulsi.
 Tamil: Thulasi.
 Telugu: Tulasi.
 Kananda: kala thulasi.
 Malayalam: *Trittavu Ocimum sanctum*.

Table No: 2 Shows the prove activity of herbal medicinal.

S.NO	HERBAL PLANTS	PARTS OF PLANTS	ACTIVITY	REFERENCES
1.	<i>Cassia fistula</i> .	Leaves.	Anti-bacterial.& Anti-fungal.	[20]
2.	<i>Azadirchata indica</i> .	Leaves and fruits.	Anti-microbial.	[21]
3.	<i>Aloe Vera</i> .	Leaves.	Anti-microbial.	[22]
4.	<i>Plectranthus amboinicus</i> .	Leaves.	Anti-microbial.	[23]
5.	<i>Tridax procumbens</i> .	Leaves.	Anti-bacterial & Anti-fungal.	[24, 25]
6.	<i>Ocimum tenuiflorum</i> .	Leaves.	Antimicrobial.	[21]

Among these herbals its exerts a antimicrobial activity and it has made a subsequent formulation to yield an anti-per spirants effect. In Table No: 2 shows the prove activity of herbal medicinal.

ORGANOLEPTICS AND CHEMICAL CONSISTUENTS OF HERBAL PLANTS

In Table No: 3 illustrate the morphological and chemical constituents of the herbal plants which constitute the similar odour and having potent biological activity of chemical compounds that are enlisted below:

TABLE NO: 3 The morphological and chemical constituents of the herbal plants

S.NO	HERBAL PLANTS	MORPHOLOGY	CHEMICAL CONSISTUENTS	REFERENCES
1.	<i>Cassia fistula</i> .	Colour: Green. Odour: Pungent.	Rehin, Rehin glycoside, Sennoside.	[26]
2.	<i>Azadirchata indica</i> .	Colour: Green. Odour: Slight pungency.	Nimboin, Nimbinene, 6-desaacetylnimbinene, Nimbandiol, Nimbolide & Quercetin.	[26]
		Colour: Green.	Barbolin, Chrysophanol glycoside, Aloe	[26]

3.	<i>Aloe Vera.</i>	Odour: Pungent.	emodin.	
4.	<i>Plectranthus amboinicus.</i>	Colour: Green. Odour: Pungent.	Carvacrol, Caryophyllene, Patchoulane.	[26]
5.	<i>Tridax procumbens.</i>	Colour: Green. Odour: Very slight pungency.	Procumbenetin, 3,6-dimethoxy-5,7,2',3',4'-pentahydroxyflavone 7-O-β-D-glucopyranoside,	[27]
6.	<i>Ocimum tenuiflorum.</i>	Colour: Green. Odour: Pungent.	Volatile oil 0.1-0.23%, Aldehydes, Glycosides, Tannins, Ascorbic acid.	[26]

ESTIMATION MODE

Antimicrobial activity

Antimicrobial activity of herbal medicinal plants was performed by the methods like Disc diffusion method [28], Tube dilution method and well plate method. Among this Disc diffusion method is better convenient to perform antimicrobial activity (antibacterial & antifungal) against the Staphylococcus species, Candida species, etc. In the disc diffusion method the different concentration of dilution were prepared from the stock solution and inoculated in the microorganism grown media and incubate for 24-48 hours, then the zone of inhibition is determined by using suitable measuring rulers.

RESULTS AND DISCUSSION

The microorganisms like staphylococcus and candida species are prone to bad odour in perspiration due to continuous deposition of these microorganisms. By introducing the herbal medicinal effect with appropriate concentration by performing of antimicrobial studies, which may act as anti-perspirant agent with using suitable formulation in future. Because antiperspirants are incorporate to the sweating area site, where the microorganism depletion is totally reduced and the bad odour is skipped off. The herbals like *Aloe Vera*, *Plectranthus amboinicus* possess the good antiseptic property and have antibacterial property. *Azadirachata indica* which constituted uprative, antiseptic, alexeteric and use to treat skin infection, burning infection & eczema. *Tridax procumbens*, *Ocimum tenuiflorum* have significant antimicrobial activity and use to treat skin infection caused by various microbial agents. All over these herbals are possessing synergistic effect when they in the mixture form. On combination usage of the herbal plants possess the flavonoids, glycosides, volatile oil does not disturbs the antimicrobial effect. We are initially viewed the perspiration as a review article, laterally we going to formulate the antiperspirant medicament in future.

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CITATION OF THIS ARTICLE

B. Lavanya, G. Vinoth, K.Vimal, B.M. Yamine, A. Maheswaran, N. Narayanan. Review of Perspiration: A Detailed Study of Microbes. Bull. Env. Pharmacol. Life Sci., Vol 6[6] May 2017: 86-91