

A CLINICAL STUDY TO EVALUATE THE EFFICACY OF AYURVEDIC/HERBAL DEODORANT ON SOLE.

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ABSTRACT

Excessive sweating (hyperhidrosis) is a common problem, eg. palms, armpits and soles (shoes wearing). It can be distressing, affected people avoid social contact with others because of embarrassment. The study was done to develop and evaluate the result of herbal deodorant by using antiperspirant activity of Ayurvedic/ Herbal drugs from different Ayurvedic Samhitas. The study was in three stages i.e conceptual study, product development and product evaluation. In conceptual study, the collection of herbal drugs having the antiperspirant as well as fragrant property from different Ayurvedic Samhitas and 8 drugs were selected for product development, these were Cedrus deodara (*Devdar*), Curcuma caesia (*Kachora*), Jasminum auriculatum (*Jue*),

Cyprus rotundus (*Musta*), Vetiveria zizanioides (*Ushir*), Sesame oil, Emulsifying wax, Vasaline i.e petroleum jelly. The product evaluation was done in 50 volunteers by using 3 assessment criteria i.e bad odour, excessive sweating and itching by using Visual Analogue Scale, The volunteers which were fixed in 4-10 scale were taken for this RCT i.e. Randomized Control Trail, the result shows that 80.6% had a problem of bad odour from shoe sole and 54.8% felt embraced in public due to it. 95.5% were willing to use Ayurvedic deodorant on sole regularly. After using this product 96.8% feel that it is effective in counteracting bad odour and 81.1% had decreasing sweating on sole.

KEYWORDS: Ayurvedic/Herbal deodorant, sole.

INTRODUCTION

A Deodorant is a substance which is applied to the body to prevent body odor in armpits, feet and other areas of the body.^[1] Bad odour caused due to the bacterial breakdown of perspiration in armpits, feet and other areas of the body. A subgroup of deodorants, antiperspirants, affect odour as well as prevent sweating by affecting sweat glands.^[2]

Every day we produce on average one liter of sweat. Our skin contains millions of glands, and it is some of these that produce sweat. When we are hot, active, nervous or stressed, our sweat glands are stimulated to produce more sweat. As sweat evaporates from our skin, it absorbs heat energy from our body and so cools us down.^[3] We have between 25,000 and 50,000 sweat glands in our armpits alone, although this is actually only a small percentage of our total. But the sweat is more likely to get trapped under our arms and can't escape and so it is more noticeable here. This is when bacteria start to feed off the sweat and create body odour. Sweat itself doesn't actually smell at all.^[4]

There are two types of sweat glands on our bodies, eccrine and apocrine. The former are all over our body and control temperature. The latter are concentrated in certain areas, such as the armpits and can be triggered by stress. This 'emotional' sweating can be a problem because about double the amount of moisture is released. This means more for the bacteria to feed on and so greater body odour.^[5]

Antiperspirants are typically applied to the underarms, while deodorants may also be used on feet and other areas in the form of body sprays. Excessive sweating of sole in shoes wearing person is also a common issue and that can be distressing and can have serious impact on our day today life. So due to this bad odour of sole, people avoid the social contact. As foot is neglected part of body we avoid such problems. as negligence is high whenever it causes some serious impact, people doesn't notice it. For this the herbal drugs which is having antiperspirant as well as fragrant property had been collected from different Ayurvedic Samhitas and by using these selected drugs product development was done. And on the basis of product development, product evaluation was done in 50 volunteers. Study design was Randomized control trail i.e. RCT. So this study was done to develop and evaluate the result of herbal deodorant by using antiperspirant and fragrant activity of Ayurvedic Herbal drugs from different Ayurvedic Samhitas, hence this can be selected for this study.

➤ **The Mode Of Action Of Available Deodorant In Market**

Perspiration itself is almost odourless. Most of the odour that accompanies perspiration is caused by the action of bacteria. Deodorants reduce this odour in one of three ways: by preventing the action of bacteria on the perspiration, by preventing the secretion of perspiration, or by masking the offensive odour with a pleasant one.^[6]

A) Deodorants that kill or inactivate bacteria contain antiseptic substances, such as alcohol, formaldehyde, and boric acid. Chlorine compounds, e.g. hypochlorite and chlorhexidine, work by killing bacteria which may be responsible for the odour.

B) Deodorants that mask perspiration odor contain perfumes. Essential oils and such disinfectants as carbolic acid simply mask the odour, making it less offensive.

C) Deodorants that prevent the secretion of perspiration are called antiperspirants. They usually contain an aluminum salt, such as aluminum sulfate, that blocking the pores preventing the free flow of sweat.

- **AIM-** To develop and evaluate the effects of Herbal/ Ayurvedic Deodorant on Sole.
- **OBJECTIVE-** To evaluate the efficacy of Ayurvedic/Herbal deodorant on sole.
- **HYPOTHESIS-** Herbal /Ayurvedic deodorant when used on shoe sole is effective as deodorant.

❖ **MATERIAL AND METHOD**

The study was conducted in following 3 stages:

- A) Conceptual study
- B) Product development
- C) Product evaluate

A) Conceptual Study

The collection of herbal drugs which having the antiperspirant as well as fragrant property from different Ayurvedic Samhitas and text books.

- Specific gravity of Wax-0.908, Specific gravity of petroleum jelly -0.815, Wax Density -0.7844, Dynamic viscosity at 60⁰c-6.89, Kinetic viscosity at 60⁰c-8.78.

Sr no.	Drug name	Botanical name	Common name	Family	Gun	Ras	Virya	Vipaka	upvuktanga
1	<i>Devdar</i>	<i>Cedrus deodara</i>	Himalayan cedar	Pinaceae	Laghu Snigdha	Tikta(bitter)	Ushna	Katu	Deodar bark, oil, leaves, resin ^[7]
2	<i>Musta</i>	<i>Cyperus rotundus</i>	Nut grass	Cyperaceae	Laghu Ruksha	Tikta(bitter) Katu kashay	Shit	Katu	Tuber ^[8]
3	<i>Jue</i>	<i>Jasminum auriculatum</i>	Indian Jui, Jasmine	Oleaceae	Laghu	Tikta(bitter) Madhur(sweet) Kashay(Astringent)	Shit	Katu	Flower, root, leaf ^[9]
4	<i>Ushir</i>	<i>Vetiveria zizanioides</i>	Khas khas grass	Graminae	Laghu Ruksha	Tikta(bitter) Madhur(sweet)	Shit	Katu	Root ^[10]
5	<i>Kachora</i>	<i>Curcuma caesia</i>	kaempfria	zingiberaceae	Laghu	Katu Tikta(bitter)	Ushna	Katu	Tuber ^[11]

Material

Cedrus deodara (*Devdar*), Curcuma caesia (*Kachora*), Jasminum auriculatum (*Jue*), Cyprus rotundus (*Musta*), Vetiveria zizanioides (*Ushir*), Sesame oil, Emulsifying wax, Vasaline i.e petroleum Jelly these 8 materials were used. the standardized and authenticated drugs as per API^[12], were used from Dravyaguna lab of tilak Ayurvved Mahavidyalaya, pune. IEC permission also taken for this trail.

The Difference Between Antiperspirant And Deodorant

An antiperspirant can also be a deodorant, because it can help to control sweat and contain a fragrance at the same time. Deodorants, on the other hand, only mask body odour and don't help to prevent sweating.^[13]

B) Product Development

Standard Operating Procedure-(SOP)

1. Medicated oil -20 gms, Emulsifying wax - 20 gms, Petroleum jelly - 15 gms, Jue ark - 4 drops for the preparation of product.
2. Aqueous extract of Devdar, Musta and Kachora is drawn and preparation of medicated oil from this aqueous extract and use of ushir kalka as per mentioned in Ayurvedic text.
3. Drugs - 1 part, Sesame oil - 4 parts, Water - 16 parts^[14]
4. As well as parameters mentioned for Sneha siddhi lakshan in Sharangdhar samhita, madhyam khand, 9/12-13, was checked.^[15]
5. Petroleum Jelly is melted by using beaker in warm water bath after melting it, add wax for melt after melting of wax, add medicated oil in it and lastly add *jue* ark in it.
6. Remove of beaker from water bath and pour it in roller container, after that, cool it at room temper ature.

METHODOLOGY

Firstly Review of literature for selection of drugs from different Ayurved Samhitas were done. On the basis of literary review 8 drugs are selected. These selected drugs having both fragrant and antiperspirant activity. Product development was done in lab. After the product development product evaluation was done. Product was given to 50 volunteers. Randomization was done as application of deodorant, only on Rt. Sole of each volunteer and Lt. sole remains as it was i.e. it was taken as a control group. Google form was created for feedback of Volunteers.^[16] In that Google form questionnaire was prepared, Questionnaire validity 100%, reliability-0.83 for Corn batch's α test.

After over the study that questionnaire was filled by the volunteers. On the basis of that feedback came to the conclusion.

C. Product Evaluation

Product was prepared as per mentioned in sop. It was given to 50 volunteers by taking their consent on consent form. Herbal deodorant was applied twice a day on Rt. shoe sole, before wearing the socks at morning and before sleep at night This trail was conducted for 15 days. The application of deodorant only on Rt. Sole of each volunteer and Lt. foot taken as a control group. By using Google form, the questionnaire was prepared, it includes about 13 questions. the feedback was given by each volunteer .on the basis of that feedback conclusion was drawn. For this study, Study design –Randomized control trail, Sample size – 50, Application – Rt. sole –study group, Lt. sole –control group, Duration -15 days, Questionnaire –validity – 100%, reliability-0.83 for Corn batch's α test.

Mode Of Action According To Ayurveda

The drug *musta* is included in kandughna gana (group of herbs relieving itching) of Charaka. According to ch.su.25 *musta* is useful absorbent digestive and carminative.^[17] It is also used as Deepana (improves digestion), Pachana (digestive). *Musta* has property called as grahi (absorbent) that's why it is used to absorb the excessive sweating It is also used for Avachurnan (dusting of powder) due to its fragrance and kandughna (relieving itching) property, it is used in so many skin diseases also.^[18]

According to kaidev Nighantu *Devdaru* has property of kandughna as well as it has tikta ras which controls the bacterial breakdown and hence it prevents the bad odour. it has also cleansing property.^[19] *Vetiver* is coolant, but yet aids in digestion. It is wildy used in treating burning sensation, skin disorders.^[20] It has laghu and ruksha guna which acts on excessive sweating. According to Charaka it is included in Varnya (group of herbs useful in improving complexion) and Tikta skandha (group of herbs having tikta ras i.e. bitter taste).^[21]

Kachora is having aromatic property, root is used for cooling effect that's why it is used in so many skin diseases. it is an ushna virya herbs (hot potency drug) so it absorbs the kleda of body. Due to its ushna virya property dushta meda (fat) also decreases, as we know swed (sweat) is mala of meda (fat), that's why it also acts on excessive sweating by absorbing it due to its ushna virya. *Jue* is an herbal drug which is having shit virya (cold potency) and it

reduces vitiated pitta dosha. it is having aromatic property ,so the perfume extracted from the flowers is used for the preparation of herbal deodorant.

The Difference Between Market Available Deodorant And This Ayurvedic /Herbal Deodorant

In the market there are so many deodorants are designed to cover up the body odour also contains an antiperspirant activity to stop excessive sweating. It contains aluminium which is used to make an effective antiperspirant because it blocks the sweat glands in underarms, this causes irritations in so many peoples which are sensitive skin and allergies. whereas herbal deodorant doesn't contains aluminium, they are free from it and other chemicals including artificial fragrance that's why people with sensitive skin and allergies may be able to use Ayurvedic/herbal deodorant with little or no irritation and it also prevents from skin cancer as it is free from chemicals.

Assessment Criteria

Assessment of volunteers from above criteria by using VAS. The volunteers which were fixed in 4-10 scale were taken for this study.

Sweating -0-4, 4-8, 8-10 -Mild, Moderate, Severe.

Bad odor--0-4, 4-8, 8-10 -Mild, Moderate, Severe.

Itching-0-4, 4-8, 8-10 -Mild, Moderate, severe.

Inclusive criteria

1. Age between 18-80 yrs.
2. Irrespective of gender.
3. Regularly shoe wearing persons.

Exclusive Criteria

1. Age below 18yrs.
2. People having diseases of sole.

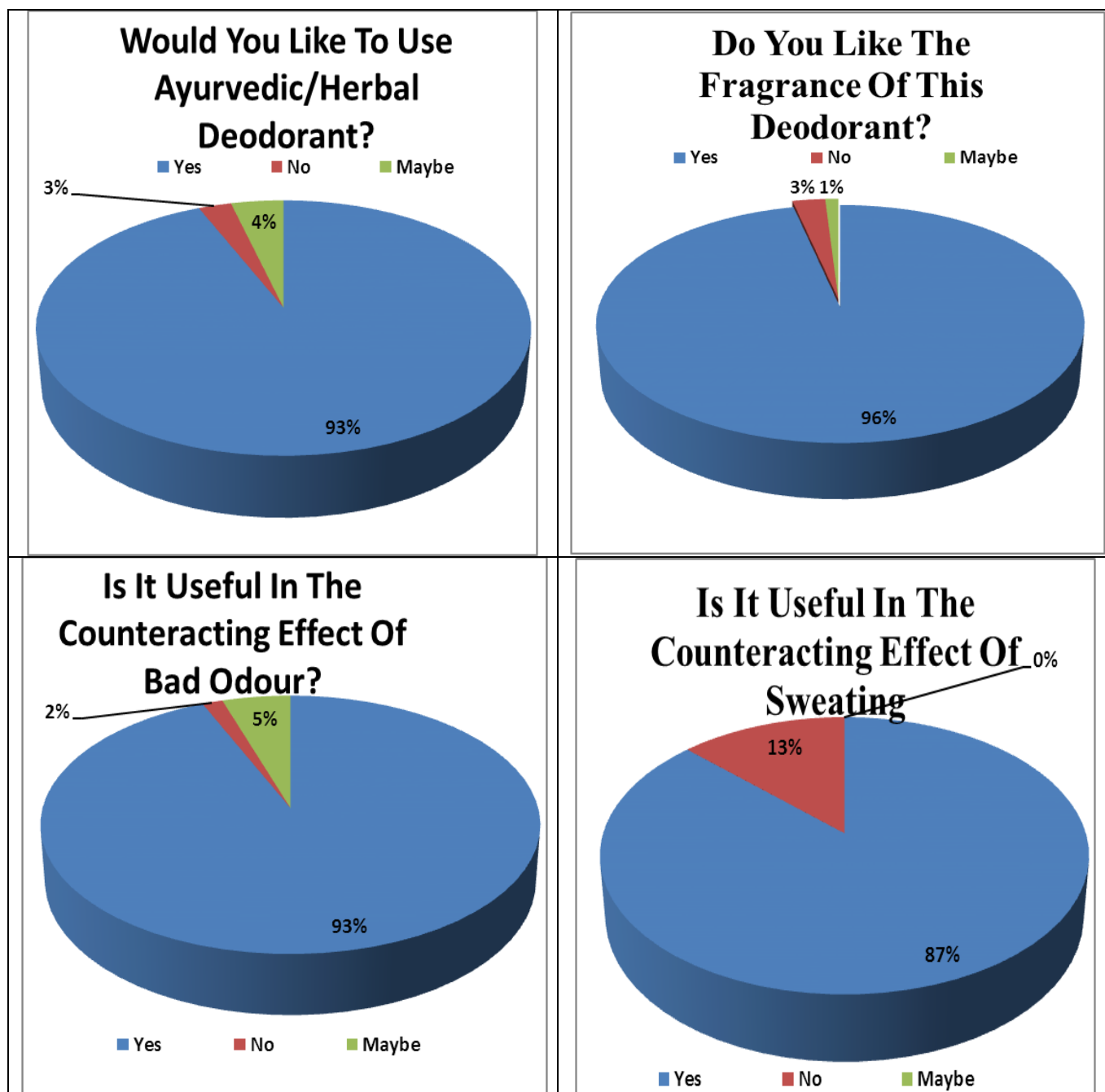
OBSERVATION

By using Google form, the questionnaire was prepared, it includes about 13 questions. the feedback was given by each volunteer .on the basis of that feedback observations are as follows, it shows.

Observation table 1.

Sr. No	Criteria	Percentage
1	Willing to use the product	93.05%
2	Problem of bad odor	80.06%
3	Decrease in sweating	87.01%
4	Decrease in bad odor	93.05 %

When the product was evaluated it shows significant result as deodorant. People shows a great response to the trail because it is time consuming, easy to use with no side effects and having a pleasant fragrance.



DISCUSSION

As we know foot is neglected part of our body so people doesn't care it as much as face and other part of body. Excessive sweating is also a common problem on sole (shoes wearing). sweating is a body tendency to decrease the body temperature and maintain it by cooling effect and normally it is odourless. but sweating in normal quantity gives this result and if its quantity increases called as excessive sweating it causes so many problems such as bad body odour and itching, and it can be distressing and can have serious bad impact on our day today lifestyle.

In the market there are so many deodorants are designed to cover up the body odour also contains an antiperspirant activity to stop excessive sweating. Deodorants reduce this odour in one of three ways: by preventing the action of bacteria on the perspiration, by preventing the secretion of perspiration, or by masking the offensive odour with a pleasant one, i.e Deodorants that kill or inactivate bacteria contain antiseptic substances, such as alcohol, formaldehyde, and boric acid. Chlorine compounds, e.g. hypochlorite and chlorhexidine, work by killing bacteria which may be responsible for the odour, Deodorants that mask perspiration odor contain perfumes. Essential oils and such disinfectants as carbolic acid simply mask the odour, making it less offensive, Deodorants that prevent the secretion of perspiration are called antiperspirants. They usually contain an aluminum salt, such as aluminum sulfate, that blocking the pores preventing the free flow of sweat, And which is used to make an effective antiperspirant because it blocks the sweat glands in underarms, this causes irritations in so many peoples which are sensitive skin and allergies. whereas herbal deodorant doesn't contains aluminium, they are free from it and other chemicals including artificial fragrance that's why people with sensitive skin and allergies may be able to use Ayurvedic/herbal deodorant with little or no irritation and it also prevents from skin cancer as it is free from chemicals.

It shows that the product is having the social benefit. So many people having this type of problems so this product shows the best solution for their problems. When the product was evaluated it shows significant result as deodorant. People shows a great response to the trail because it is time consuming, easy to use, easy to carry with no side effects and having a pleasant, fresh fragrance as well as it is cheapest source.

RESULT

For this study 50 volunteers participated, 80.6% had a problem of bad odour from sole and 54.8% felt embarrassed in public due to it. 93.5% were willing to use Ayurvedic deodorant on sole regularly. After using this product 93.5% feel that it is effective in counteracting bad odour and 87.1% had decreasing sweating on sole. Data Analysis was done with Chi square and Mann Whitney test, which shows statistically significant i.e. $p < 0.05$.

When the product was used by 50 volunteers, it shows significant result as deodorant.

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