



TO EVALUATE THE EFFICACY OF THE YAJNA KARMA TO CONTROL/ARREST THE AIRBORNE MICROBES

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ABSTRACT

Yajna Karma is an age-old scientific technique innovated by our seer saints to purify the air, the water, the mind, and the body. Many herbs, cow's Ghee, and the firewood of the specific trees are used for the purpose. The various ingredients used in the *Yajna Karma* have the inherent potential to detoxify the atmosphere and the surroundings by eliminating microbes and chemical toxic substances.

Keywords: *Yajna Karma*, *Agnihotra*, *Ayurveda*, etc.

INTRODUCTION

- In India, during the *Vedic* age, *Yajan Karma* was the efficient and consistent ritual of purifying the environment and, hence maintaining a perfect ecological balance. It was being performed as a regular practice by the inmates of *Gurukuls*, *Aranyakas*, and *Grihasthas*. Moreover, the use of medicinal smoke is also mentioned in *Ayurveda* as *Dhoomnasya*¹ and in

Vedas as *Yajna Karma*. It was used for medical, ecological, and spiritual pursuits. Therefore, in modern times also, *Yajna Karma* can be used for physical, mental, and ecological issues. The *Yajna Karma* is supposed to purify the atmosphere and the water by controlling the microbes and chemical substances present in them. It also can be used for therapeutic

purposes as well as to help faster germination of the seeds. The present study is aimed to evaluate the effect of *Yajna Karma* on the purification of the environment by reducing or/and eliminating the microbes present in the air.

Aim & Objectives

1. To isolate and quantify micro-organisms present in indoor air by using the passive method.
2. To evaluate the efficacy of *Yajna Karma* with help of a scientific microbiological study.
3. To conclude the effect of the *Yajna* on the microbes suspended in the air.

Requirement of the material and equipment

1. *Vedic Hawan Samgri* with other medicinal herbs used for purifying the environment. (Figure-1)
2. Specially designed formulation of *Ayurvedic* herbs having time-tested efficacy for the *Yajna Karma* (Figure-2)
3. A spare room
4. Nutrient Blood Agar media (for the growth of bacteria)
5. Potato- Dextrose Agar media PDA (for growth of fungus)
6. Chemicals and Reagents for biochemical Tests
7. Gram-Staining
8. Lacto-Phenol Staining
9. Incubator (37°C)
10. Laminar Air Flows
11. Glass-wares
12. Microscopes for microscopic Examination

Methodology

The following methodology was adopted for the evaluation and performance of the *Yajna*: -

- A separate room was kept for this purpose.
- Before the performance of the samples, the microbes were collected by an expert microbiologist.
- The following steps were taken to collect the samples –

- ✓ For these Passive methods were used (kept Petri plates open in the room for 1 hour)
- ✓ First of all, nutrient blood agarified plates and PDA plates were kept for 60 min in the room above 1 ft. from the floor in the center of the room.
- ✓ After exposing the plates then were kept in an incubator at 37° C for 48 hrs.
- ✓ After cultivation of micro-organisms follows gram staining.
- ✓ After gram staining and microscopic examination then proceed for bio-chemical test.
- ✓ After bio-chemical test analysis then a particular micro-organism is isolated.
- ✓ To quantify the micro-organism in a room using the following formula: -

$$\frac{\text{CFU}}{\text{Time}} \times \text{Area of Petri dish}$$

- * CFU value x Area of Room, colony forming unit
- The photographs of the colonies so developed were taken for the study.
- *Yajna* was performed from 11:00 am to 12:30 am in the room in the building of Ayurvedic pharmacy. This room measured 194.19. The *Ahuti*s of *Hawan Samgriri (Gayatri Mahima)* {Table no.1} and especially prepared formulation of the *Ayurvedic* herbs {Table no.2} and few other *Sugandhita Dravya* (aromatic *Ayurvedic* herbs) {Table no.3}. The *Yajna* was completed with the Chanting of *Vedic Mantras*. The door and windows of the room were kept open for around 3 hours and 15 min till the smoke of the *Yajna* was present in the room. There the door and the windows were shut till 1:15 pm on 25/03/2022.
- There a team of microbiologists collected the samples of the air in the room the next day at 12:40 pm.

Table 01: Detail of ingredients used in Gayatri Mahima Hawan Samgiri

✓	Made with excellent quality ingredients collected from the Himalayan region of India.
✓	Used for mental peace and the purification of the atmosphere

Table 02: List of ingredients used mixed with Hawan Samgiri of Gayatri Mahima separately

S. N.	Ingredient	Role in Yajna Karma
1.	Agar (Agarwood) ²	Having aromatic properties and is used to remove bad smells.
2.	Anardana (Dry pomegranate seeds powder) ³	Pomegranate has antioxidant, anti-viral, and anti-tumor properties and is said to be a good source of vitamins, especially vitamin A, vitamin C, and vitamin E, as well as folic acid.
3.	Aam (mango) ⁴	Having Absorbent properties in its bark When mango wood is burnt, a gas called formic aldehyde (H-CHO) is produced which kills dangerous viruses and bacteria and purifies the environment. This gas is produced even when jaggery is burnt.
4.	Bhoj Patra (Himalayan Silver Birch) ⁵	Essential oils are also used to treat psychiatric disorders and have a pleasant aroma.
5.	Chawal (Rice) ⁶	Having essential oils and also used to treat psychiatric disorders
6.	Cow Dunk Cake ^{7,8}	Using cow dung to disinfect an area involves coating the floor with a paste of fresh cow dung. Burning cakes of dried cow dung are also said to repel insects and mosquitoes. It contains bacteria named Mycobacterium vaccae which is responsible for activating neurons that produce serotonin. Serotonin is a neurotransmitter that contributes to making a person feel happy. Cow dung protects everybody. It is anti-radiation. It prevents radiation.
7.	Dry Rose Petals ⁹	Helps in purifying the atmosphere.
8.	Go Ghrita (Cow's clarified butter) ¹⁰	Cow's Ghee as it works as an antidote to poison. Its fragrance purifies the physical environment. When the cow's ghee is burnt in the fire, the fragrance goes up with the fire and mixes with the atmosphere. The fat particles from the yajna fire are overloaded with dust particles in the atmosphere and come back to the earth in the form of rain which nourishes the vegetation of mother earth. Also, Russian scientists prove that the smoke generated due to burning the cow's ghee will reduce the effect of radiation in the atmosphere up to a significant extent.
9.	Guggulu (Indian bdellium) ¹¹	Antibiotic herbs like Guggulu when burnt cause rain and purify the atmosphere. Havan ritual is like giving back to the atmosphere what we have taken from the atmosphere. The aromatic herbs when burnt remove the foul odour in the atmosphere through their fragrance.
10.	Haldi Root (Turmeric) ¹²	Its antiseptic properties disinfect the air.
11.	Indra Jo (Conessi) ¹³	The herbs offered in fire get vaporized and spread in an environment that spiritually charges and purify the surrounding with its disinfectant and purifying properties. The medicinal and nourishing vapors of Hawan herbs also enter the body through breathing and pores of the skin in micro gaseous form helping enhance the health of the body.
12.	Jayaphal (Nutmeg) ¹⁴	It contains essential and has many health benefits like anti-bacterial, and anti-inflammatory properties and spiritually it brings prosperity.
13.	Jo (Barley) ¹⁵	The chemical reaction and sublimation of selected wood and Hawan Samagri in an inverted pyramid-shaped Yajna-Kunda deliver a vast amount of health benefits and therapeutic and environmental purification applications.

14.	<i>Jatamansi (Spike-nard)</i> ¹⁶	Increase GABA, 5-HT, and 5-HIAA and perform an anti-convulsion function.
15.	<i>Karpura (Camphor)</i> ¹⁷	Burning Camphor can aid in keeping our minds calm and at peace with its fragrance.
16.	<i>Kamalagatta (Lotus seed)</i> ¹⁸	Burning Camphor can aid in keeping our minds calm and at peace with its fragrance.
17.	<i>Karpura Kachari (Ginger Lily)</i> ¹⁹	Purify the environment and improve health.
18.	<i>Loban (Benzoin resin)</i> ²⁰	Burning Loban/Benzoin acts as an AntiDepressant. ,, It directly affects the TRPV3 protein in our brain, producing warm sensations on the skin. When one comes in contact with the „loban“ incense, an anxiolytic effect is experienced, and the individual feels relaxed and stress-free, with a clear mind.
19.	<i>Chandan (Sandalwood)</i> ²¹	It contains both α -santalol and β -santalol. This everpresent chemical constituent contributes greatly to Sandalwood oil“s grounding effect on emotions.
20.	<i>Navgrah Samhidha</i> ²²	Spiritually charge and purify the surrounding. (<i>Ark-Palash-Khadir-Peepal-Apamarga-Audambar-Sami-Durva-Kusha</i>)
21.	<i>Nagarmotha (Nut grass)</i> ²³	Anti-inflammatory, anti-microbial, antifungal, and anticonvulsant action.
22.	<i>Nagakesar (Ceylon ironwood)</i> ²⁴	Anti-inflammatory, anti-pyretic
23.	<i>Peeli Sarson (Yellow mustard seed)</i> ²⁵	Contain volatile oils and helps in burning other ingredients. For the veneration of ancestors, used in Tantric tradition to get rid of bad spirits; oil is used in the reverence of the planet Saturn (Shani).
24.	<i>Panchtulsi Panchanga</i> ²⁶	They all together work to boost immunity, skin care, and overall health care for the body.
25.	<i>Sukha Nariyal (Dry coconut)</i> ²⁷	Increase GABA and, serotonin levels and perform an anti-convulsion function.
26.	<i>Shakkar</i> ²⁸	Releases the formic aldehyde gas. Since, formaldehyde is effective only in the presence of water that is why there is a ritual of sprinkling the water around the Havan–Kund and in the air. Water is also available in form of water vapours found in the atmosphere.
27.	<i>Satavari (Buttermilk root)</i> ²⁹	Antioxidant, antimicrobial, anti-inflammatory.
28.	<i>Tila (Sesame)</i> ³⁰	Antioxidant, antimicrobial, anti-inflammatory.
29.	<i>Tagar (garden heliotrope)</i> ³¹	Antioxidant, antimicrobial, anti-inflammatory.



Table 03: List of a few other Sugandhita Dravya (ingredient) used in Hawan Samgiri ³²

S. N.	Ingredient	Role in Yajna Karma
1.	<i>Kshudra Ela</i>	Helps in purifying the atmosphere with their aromatic effect and also the essential oils present in them help in burnt other ingredients.
2.	<i>Lavanga</i>	
3.	<i>Javitri</i>	
4.	<i>Supari</i>	




The experiment was done in the following cycle:-

An experiment conducted on 22nd March 2022

Passive Method for Bacteria (Table 1)

Observation Before Yajna Karma on 22nd March 2022 (Time:- 1:50-2:50pm Temp:- 31°C)	After Yajna Karma (Yajna Karma completed on 25th March 2022 (Time:- 12:40-1:40pm Temp 33°C)
1. 20 colonies. 2. “Staphylococcus SPP”. <ul style="list-style-type: none"> • CFU (colony forming unit of Bacteria in the room) – 3.16/m³ 	No growth of Bacteria was seen after placing petri plates for about 1 hour in the room at 33°C.
Related Photographs	
 <p style="text-align: center; border: 1px solid black; padding: 2px;">Bacterial colonies</p>	 <p style="text-align: center; border: 1px solid black; padding: 2px;">No growth of Bacteria</p>

Passive Method for Fungus (Table No. 2)

Observation Before Yajna Karma on 22nd March 2022 (Time:- 1:50-2:50pm Temp:- 31°C)	After Yajna Karma (Yajna Karma completed on 25th March 2022 (Time:- 12:40-1:40pm Temp 33°C)
1. 8 colonies. 2. A. Flavus, A. Niger and P. Chrysogenum were present	1. 5 No. of Fungal colonies found 2. The same fungus was found
<ul style="list-style-type: none"> • CFU (colony forming unit of Fungus in the room) – 245.97/m³ 	<ul style="list-style-type: none"> • CFU (colony forming unit of Fungus in the room) – 0.791/m³
Related Photographs	
 <p style="text-align: center; border: 1px solid black; padding: 2px;">A. Flavus, A. Niger and P. Chrysogenum Fungal colonies</p>	 <p style="text-align: center; border: 1px solid black; padding: 2px;">A. Flavus, A. Niger and P. Chryso- genum Fungal colonies</p>
 <p style="text-align: center; border: 1px solid black; padding: 2px;">P. Chrysogenum Fungal colonies</p>	

DISCUSSION

Yajna Karma is a very effective ancient Karma having a holistic approach innovated by Indian saints.

Yajna Karma is having great value to maintain the ecological balance and can clear the air of suspended toxic chemical particles as well as various kinds of microbes. It also provides a therapeutic advantage to

many kinds of diseases whether somatic or psychosomatic. Here, this *Yajna Karma* is limited to studying the impact of *Yajna* on microbial growth in the air. Based on the studies of the samples of the bacteria and fungus suspended in the air so collected before and after the *Yajna* and the impact of the same is explained in table no 1&2. Vedas emphasize performing *Hawan* twice daily for purification of the environment, spiritual growth, purity of mind, and personal growth. This practice in India dates back to 7500 years back. For a practice to have survived for thousands of centuries must have a rational scientific basis. It strongly suggests that *Hawan* is not merely burning of few substances, but it destroys harmful gasses like Sulphur dioxide and Nitrous oxide suspended in the air. It also kills the germs present in the air (30). Mixing of *Hawan Samgiri*, *Ghee* and other products put into the fire produces smoke at a high temperature which spread to the atmosphere. We are putting *Ghee* and other such products which are rich in oil like rice, *Masha ki dal* (lentils), *Tila* (sesame seeds), barley seeds, etc. When they are burnt in fire the molecules of the *Ghee* and the oil contain in various herbs expand in the air. Molecules of various herbs used in the *Hawan Samgiri* get attached to the molecules of the *Ghee* and the oil. The fatty substances used in *Yajna* are mainly *ghee* and others of vegetable origin. *Ghee* helps in the rapid combustion of cellulose of wood and keeps the fire alight. All fatty substances used are combinations of fatty acids, which volatilize easily. The combustion of the glycerol portion gives acetone bodies, pyruvic aldehyde, glyoxal, etc. the hydrocarbons produced in the reactions again undergo slow combustion, and as a result, methyl and ethyl alcohols, formaldehyde, acetaldehyde, formic acid, and acetic acids have resulted. This sublimation of the oil and the molecules of the herbs which have strong medicinal value and pharmacological activity impact the atmosphere and human beings as it is inhaled. The inhaled medicine first reaches the brain followed by the lungs and other subtle components of the body. We use mango wood as firewood in the *Hawan*. On burning it releases FORMIC ALDEHYDE gas which kills harm-

ful bacteria to purify the atmosphere. Chemically also Formaldehyde is sprayed to disinfect walls and ceilings and is also used to preserve the fruits as formic acid which is produced by burning mango wood. Similarly, *Loban* used in *Hawan Samgiri* has benzoin in it the key benefit of burning *Loban* is that it acts as a bactericidal. The project started on 21.03.2022 with the preparation of petri plates adhering to the strict scientific norms for 24 hours. Plates were exposed in the room of *Hawan* on 22.03.2022 at 1:50 pm for one hour. *Hawan* was performed on 25.03.2022 at 11:30 am. Similarly, the petri plates prepared in a similar fashion were again kept in the *Hawan* room for 1 hour on 26.03.2022 to collect the samples of the microbes after the *Hawan*. The samples so collected were studied to the findings of the impact of the *Hawan* on the microbes present in the room in which the *Yajna Karma* was conducted. On observing the plates on which the sample was collected prior to the *Hawan* it was found that the major bacteria that grew on the medium was *Staphylococcus SPP* and 20 colonies of this bacteria had grown on the medium. But when the plates on which the samples after the *Hawan* were collected were observed by microscopy no growth of *Staphylococcus SPP* bacteria was found. When the petri plates for collecting the samples before the *Hawan* were observed, it was found that 3 types of fungi i.e., *A. Flavus*, *A. Niger*, *P. Chrysogenum*. Total 8 numbers of colonies of these fungi were found before the *Hawan*. When the impact of the *Hawan* was studied it was found that the colonies were reduced from 8 to 5. Thus, the *Yajna Karma* arrested the growth of *Staphylococcus SPP* and greatly reduced the growth of the three strains of the fungi.

CONCLUSION

We conclude that *Yajna Karma* is helpful in purifying the atmosphere by greatly impacting the presence and the growth of the microbes suspended in the air. If the *Yajna Karma* is done in a proper manner with the proper mixture of the various herbs and prescribed firewood it can help control harmful bacteria. Efforts

should be made to design a model to cleanse the air and maintain a healthy eco system to prevent pandemics and the spread of microbes at the change of the season. A standardized practice of *Yajna Karma* at homes, colonies, residential societies, and on-premises of hospitals/nursing homes should be performed to check the microbial growth with herbs that are more eco and health-friendly.

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