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## Effect of agnihotra on airborne microorganisms

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### ABSTRACT

Agnihotra is the basic home technique used since the ancient times in India as a religious ritual. It is said that the Agnihotra has medicinal implications and also known to control environmental pollution. Inspired of the above fact we conducted some experiments to check the antibacterial and antifungal activity of Agnihotra and we got an outstanding result. The Agnihotra was performed at times of sunrise and sunset exactly in a pyramid shaped copper vessel or Dharaka. Cow dung cake was used for firing. Unpolished and intact rice and pure ghee of native cow was added to the fire as Havissu. The experiment antimicrobial activity was done by Petri plate exposure method. The sterile nutrient agar(NA) and Sabouraud's Dextrose agar(SDA) was exposed in a selected room in ten minutes before performing Agnihotra. Another set of plates were exposed 10 min and 20 min after performing Agnihotra. The plates were incubated at ambient temperature regimes and colony count was taken after incubation. According to the results obtained, it was concluded that Agnihotra was found to be very effective against Airspora. A 63% reduction in bacterial colony and 91% reduction in fungal colony count was obtained after performing Agnihotra. © 2008 Trade Science Inc. - INDIA

### KEYWORDS

Agnihotra;  
Antimicrobial;  
Seasons;  
Sir born microbes.

### INTRODUCTION

All over the world the alarm bells are ringing. Today everyone is shaken with the realization that all around us pollution is fast on the increase. No place can be called safe from pollution. What varies is the type of pollutant and the degree of pollution. Air, water, land has been severely affected by the pollution. This

has disturbed the balance of nature and it also affects on human beings. Among various types of pollution like gaseous pollution, water pollution, food pollution, radioactive pollution, the microbial pollution is the most important type for people in the medical and paramedical field. The microbes are ubiquitous in nature. The microbial pollution causes many deadly diseases and severe infections. To avoid and overcome such evil ef-

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fects of pollution a sure remedy is necessary. It is possible to purify the whole atmosphere by using our "Agnihotra". It is perfectly suitable for this purpose.

Vedas reveal five eternal principles of life style, a discipline for the benefit of humanity. This is the "Five fold path". Those five principles are Yagnya (Agnihotra), Daan, Tapa, Karma, and Swadhyaya. According to Vedas for the purification of mind it is necessary to purify the atmosphere and Agnihotra purifies it. Agnihotra is the major key in Homatherapy. Homatherapy is in practice in some part of the world. The word "Therapy" means treatment, curing of disease. The Homatherapy is the treatment of fire on atmosphere to cure diseases.

Microbiologists of Ferguson College, Pune, undertook an experiment with Agnihotra. This experiment proved that even with only one time Agnihotra 77.5% of 8000 cubic feet air was purified. It was also established by this experiment that with only one time Agnihotra 96% of the pathogenic bacteria vanishes.

### MATERIALS AND METHODS

#### Definite timings

The specific time is called the 'Rhythm of nature'. Revolving earth's half portion comes in front of sun and remaining half is going away from the sun. The place where the rays of the sun reach first that state is called 'sunrise' and place where the last rays vanish that state is called 'sunset'. Agnihotra was performed conventional method at both evening and sunrise time. At sunset time the growth of the pathogenic bacteria and fungi is more and hence Agnihotra performed at this time has microbicidal effect on atmosphere.

#### Cow dung cake

Dung of the cow family or bull was used for preparing the Agnihotra fire. Cow dung is a recognized disinfectant and acts as antibacterial (antimicrobial) properties of cow dung cake was used. Fire was prepared by using camphor, dry gugul or cotton wicks duly soaked in cow's pure ghee.

#### Pot used

The Agnihotra pot is of a specific size and shape. Its dimensions are 14.5×14.5 cms at top, 5.25×5.25 cms at bottom and 6.5cms in height. Towards the height

there are three uniformly sized levels or chambers. From each chamber, the rising pot's height and breadth has increased proportionally to reach the specified dimensions. The Agnihotra pot is considered as a receiver of energy. Slowly the surroundings of the place where Agnihotra was performed is cleansed of poisonous pollutants and a pleasing fragrance is filled in atmosphere. The power of the Agnihotra pyramid increases multifold as soon as it comes in direct contact with the Agnihotra fire.

#### Offerings (oblations)

Agnihotra is a regular practice, a daily yagnya. Though the rites and rituals, the ingredients and mantras for every yagnya, right from the basic Agnihotra to Ashwamedha, are different there is only one common but essential thing required for all these yagnyas- 'Cow's pure ghee'. It is believed that cow's pure ghee offered to the yagnya fire purifies the atmosphere, spreads a pleasant fragrance in it.

**Raw rice:** This is the second ingredient or subsidiary ingredient prescribed along with cow's ghee for the oblations. Removing of small stones, dust etc from rice is must. The removing of broken grains is also essential. We can use only the unbroken full grains- "Akshath". One pinch of clean rice grains should be taken for each mantra oblation.

#### Performance of agnihotra

Agnihotra was performed exactly at sunrise and sunset timings as per standard charts in a pyramid shaped copper pot- "Dharaka" using cow dung cake, cow's pure ghee and unpolished rice, along with utterance of Agnihotra mantra

#### Petriplate exposure method

To find the antifungal and antibacterial activity affected by Agnihotra was studied by Petriplate exposure method.

After the preparation for performance of Agnihotra the plates of both Nutrient Agar (NA) and Sabouraud's Dextrose Agar (SDA) were exposed in a particular selected room of size 100 square feet. The plates were exposed for 10 minutes before the performance of Agnihotra. Then the Agnihotra was performed according to the systematic procedure. After adding oblations the fire or pot was not disturbed. The three sets of NA

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and SDA plates were exposed for fumes. The second sets of plates were exposed for fumes after 10 minutes of performance of Agnihotra. The three sets of plates were exposed for 20 minutes after performing Agnihotra. Then all the plates were incubated. The NA plates were incubated at 37° C for 24-48 hours. The SDA plates were incubated at room temperature for 3.

After the incubation period, the number of colonies formed on plates (both before and after) were counted. For this sake colony counter was used, a device used for counting the number of colonies formed on the Petri plate.

**RESULTS**

According to the results we got, Agnihotra is very effective on air borne microorganisms. The Agnihotra will be a best method for the purification of atmosphere.

The experiment was conducted in different seasons. The effect of Agnihotra on both fungi and bacteria was found at the particular timings in three different seasons- summer (March), winter (December) and also rainy (July). The results we got in different seasons on both fungi and bacteria reveal a reduction in their number by the performance of Agnihotra. The different re-

sults we got are tabulated below.

According to the results obtained, there is a reduc-

**Number of bacterial colonies obtained on NA plates exposed in March [summer]**

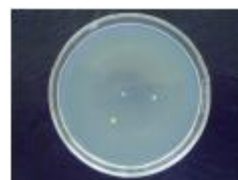
Date	Plate number	Number of colonies before	Number of colonies after	% of colonies after	% Reduction
07.03.06	1		14	11.47	88.5
	2	122	11	9.06	90.94
	3		10	8.19	91.81
08.03.06	1		12	10.61	89.39
	2	113	10	8.84	91.16
	3		09	7.96	92.04
17.03.06	1		14	8.48	91.52
	2	165	12	7.27	92.73
	3		09	5.45	94.55
18.03.06	1		10	7.24	92.76
	2	138	08	5.79	94.21
	3		05	3.62	96.96
19.03.06	1		15	10.56	89.44
	2	142	11	7.74	92.26
	3		09	7.04	92.26
21.03.06	1		09	9.09	90.91
	2	99	07	7.07	92.93
	3		04	4.04	95.96
22.03.06	1		08	7.47	92.53
	2	107	07	6.54	92.46
	3		05	4.67	95.33
23.03.06	1		12	9.37	90.53
	2	128	11	8.59	91.41
	3		08	6.25	93.75
24.03.06	1		10	6.28	93.72
	2	159	06	3.77	96.23
	3		05	3.14	96.86
25.03.06	1		11	5.97	94.03
	2	184	09	4.89	95.11
	3		06	3.26	96.74
26.03.06	1		14	6.89	93.11
	2	203	11	5.40	94.60
	3		08	3.94	96.06
27.03.06	1		10	5.15	94.85
	2	194	06	3.09	96.91
	3		03	1.54	98.46
28.03.06	1		11	11.00	89.00
	2	100	08	8.00	92.00
	3		05	5.00	95.00
29.03.06	1		12	10.16	89.84
	2	118	06	5.08	94.92
	3		02	1.69	98.31
30.03.06	1		13	7.30	92.70
	2	178	10	5.61	94.39
	3		07	3.93	96.07



Before the performance At the time of performance



Before the performance After 10 minute



Before the performance After 20 minute

**Reduction in the number of bacterial colonies on na plates**

Average reduction in nutrient agar plates; (1).51±2.0519 (at the time of performance of Agnihotra); (2) 93.59±1.8603 (after 10 minutes); (3). 95.35±2.0703 (after 20 minutes)

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Number of bacterial colonies obtained on NA plates exposed in July [Rainy]

Date	Plate number	Number of colonies before	Number of colonies after	% of colonies after	% Reduction
15.07.06	1		09	10.80	89.20
	2	83	07	08.43	91.57
	3		05	06.02	93.98
16.07.06	1		06	10.16	89.84
	2	59	05	08.40	91.60
	3		05	08.40	91.60
17.07.06	1		09	13.00	87.00
	2	69	07	10.10	89.90
	3		04	05.70	94.30
18.07.06	1		05	11.60	98.40
	2	43	04	09.30	90.70
	3		02	04.60	95.40
19.07.06	1		05	13.80	86.20
	2	101	03	08.30	91.70
	3		02	05.50	94.50
20.07.06	1		07	08.90	91.10
	2	78	06	07.60	92.40
	3		03	03.80	96.20
21.07.06	1		08	08.90	91.10
	2	89	07	07.80	92.20
	3		04	04.40	95.50
22.07.06	1		05	10.40	89.60
	2	58	03	06.20	93.80
	3		02	04.10	95.90
23.07.06	1		09	14.20	85.80
	2	63	06	09.50	90.50
	3		02	03.10	96.90
24.07.06	1		05	08.70	91.30
	2	57	03	05.20	94.80
	3		02	03.50	96.50
25.07.06	1		04	19.20	80.80
	2	66	04	15.30	84.70
	3		02	07.60	92.40
26.07.06	1		06	16.20	83.80
	2	37	05	13.50	86.50
	3		03	08.10	91.90
27.07.06	1		07	10.10	89.90
	2	69	05	07.20	92.80
	3		04	05.70	94.30
28.07.06	1		04	09.50	90.50
	2	48	03	07.10	92.90
	3		01	02.30	97.70
29.07.06	1		05	17.20	82.80
	2	53	04	13.70	86.30
	3		03	10.30	89.70

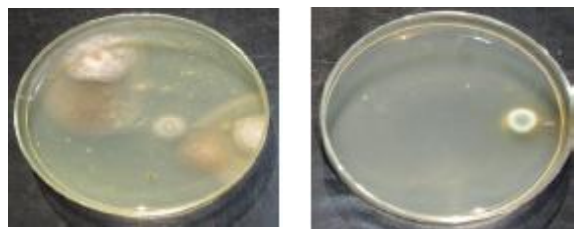
Average reduction in Nutrient agar plates; 87.76±3.2950(at the time of performance of Agnihotra); 90.82±2.8810 (after 10 minutes) 3. 94.45±2.2180 (after 20 minutes)

Number of bacterial colonies obtained on NA plates exposed in December [Winter]

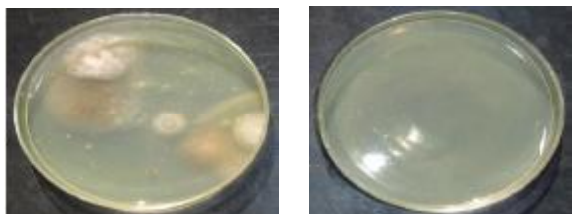
Date	Plate number	Number of colonies before	Number of colonies after	% of colonies after	% Reduction
15.12.06	1		09	10.70	89.30
	2	84	06	07.10	92.90
	3		02	02.30	97.70
16.12.06	1		07	07.90	92.10
	2	88	05	05.60	94.40
	3		04	04.50	95.50
17.12.06	1		07	10.20	89.80
	2	68	06	08.80	91.20
	3		03	04.40	95.60
18.12.06	1		06	08.10	91.90
	2	74	05	06.70	93.30
	3		02	02.70	97.30
19.12.06	1		07	07.50	92.50
	2	93	06	06.40	93.60
	3		04	04.30	95.70
20.12.06	1		06	08.60	91.40
	2	69	03	04.30	95.70
	3		02	02.80	97.20
21.12.06	1		08	09.40	90.60
	2	85	07	08.20	91.80
	3		04	04.70	95.30
22.12.06	1		07	08.90	91.10
	2	78	06	07.60	92.40
	3		03	03.80	96.20
23.12.06	1		09	15.00	85.00
	2	60	05	08.30	91.70
	3		03	05.00	95.00
24.12.06	1		07	07.80	92.20
	2	89	05	05.60	94.40
	3		03	03.30	96.70
25.12.06	1		09	09.80	90.20
	2	91	06	06.50	93.50
	3		03	03.20	96.80
26.12.06	1		05	06.40	93.60
	2	77	03	03.80	96.20
	3		01	01.20	98.80
27.12.06	1		08	09.70	90.30
	2	82	04	04.80	95.20
	3		02	02.40	97.60
28.12.06	1		09	09.10	90.90
	2	98	06	06.10	93.90
	3		03	03.00	97.00
29.12.06	1		07	08.10	91.90
	2	86	05	05.80	94.20
	3		04	04.60	95.40

Average reduction in Nutrient agar plates; 90.85±1.6431(at the time of performance of Agnihotra); 93.62±1.5400(after 10 minutes) 3. 96.48±1.1109(after 20 minutes)

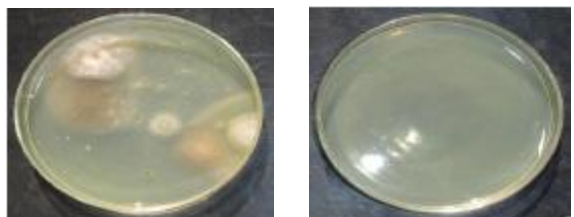
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Before the performance      At the time of performance



Before the performance      After 10 minute



Before the performance      After 20 minute

**Reduction in the number of bacterial colonies on NA plates after the performance of agnihotra**

**Number of fungal colonies obtained on SDA plates exposed in March [summer]**

Date	Plate number	Number of colonies before	Number of colonies after	% of colonies after	% Reduction
07.03.06	1		02	25.00	75.00
	2	08	01	12.50	87.50
	3		00	00.00	100.00
08.03.06	1		02	20.00	80.00
	2	10	02	20.00	80.00
	3		00	00.00	100.00
17.03.06	1		01	11.00	89.00
	2	09	00	00.00	100.00
	3		00	00.00	100.00
18.03.06	1		01	14.00	86.00
	2	07	00	00.00	100.00
	3		00	00.00	100.00
19.03.06	1		01	20.00	80.00
	2	05	00	00.00	100.00
	3		00	00.00	100.00
21.03.06	1		00	00.00	100.00
	2	05	00	00.00	100.00
	3		00	00.00	100.00
22.03.06	1		00	00.00	100.00
	2	09	00	00.00	100.00
	3		00	00.00	100.00
23.03.06	1		01	11.00	89.00
	2	09	00	00.00	100.00
	3		00	00.00	100.00

Date	Plate number	Number of colonies before	Number of colonies after	% of colonies after	% Reduction
24.03.06	1		00	00.00	100.00
	2	08	00	00.00	100.00
	3		00	00.00	100.00
25.03.06	1		01	16.00	84.00
	2	06	00	00.00	100.00
	3		00	00.00	100.00
26.03.06	1		00	00.00	100.00
	2	08	00	00.00	100.00
	3		00	00.00	100.00
27.03.06	1		00	00.00	100.00
	2	08	00	00.00	100.00
	3		00	00.00	100.00
28.03.06	1		00	00.00	100.00
	2	06	00	00.00	100.00
	3		00	00.00	100.00
29.03.06	1		01	11.00	89.00
	2	09	00	00.00	100.00
	3		00	00.00	100.00
30.03.06	1		00	00.00	100.00
	2	09	00	00.00	100.00
	3		00	00.00	100.00

Average reduction in Sabouraud's dextrose agar plates; 89.80±8.7738(at the time of performance of Agnihotra; 97.00±7.9730(after 10minutes); 3.100.00±0.0000(after 20 minutes)

**Number of fungal colonies obtained on SDA plates exposed in July [Rainy season]**

Date	Plate number	Number of colonies before	Number of colonies after	% of colonies after	% Reduction
15.07.06	1		01	20.00	80.00
	2	05	00	00.00	100.00
	3		00	00.00	100.00
16.07.06	1		00	00.00	100.00
	2	04	00	00.00	100.00
	3		00	00.00	100.00
17.07.06	1		00	00.00	100.00
	2	04	00	00.00	100.00
	3		00	00.00	100.00
18.07.06	1		00	00.00	100.00
	2	03	00	00.00	100.00
	3		00	00.00	100.00
19.07.06	1		00	00.00	100.00
	2	02	00	00.00	100.00
	3		00	00.00	100.00
20.07.06	1		01	16.66	83.44
	2	06	00	00.00	100.00
	3		00	00.00	100.00
21.07.06	1		00	00.00	100.00
	2	02	00	00.00	100.00
	3		00	00.00	100.00
22.07.06	1		01	20.00	80.00
	2	05	00	00.00	100.00
	3		00	00.00	100.00
23.07.06	1		00	00.00	100.00
	2	01	00	00.00	100.00
	3		00	00.00	100.00
24.07.06	1		00	00.00	100.00
	2	02	00	00.00	100.00
	3		00	00.00	100.00

Table contd.



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Date	Plate number	Number of colonies before	Number of colonies after	% of colonies after	% Reduction
25.07.06	1		00	00.00	100.00
	2	02	00	00.00	100.00
	3		00	00.00	100.00
26.07.06	1		01	25.00	75.00
	2	04	00	00.00	100.00
	3		00	00.00	100.00
27.07.06	1		00	00.00	100.00
	2	02	00	00.00	100.00
	3		00	00.00	100.00
28.07.06	1		00	00.00	100.00
	2	03	00	00.00	100.00
	3		00	00.00	100.00
29.07.06	1		01	16.66	83.44
	2	06	00	00.00	100.00
	3		00	00.00	100.00

Average reduction in Sabouraud's dextrose agar plates;  $90.20 \pm 09.5700$  (at the time of performance of Agnihotra);  $100.00 \pm 0.0000$  (after 10 minutes)  $3.100.00 \pm 00.0000$  (after 20 minutes)

Number of fungal colonies obtained on SDA plates exposed in December [Winter]

Date	Plate number	Number of colonies before	Number of colonies after	% of colonies after	% Reduction
15.12.06	1		01	25.00	75.00
	2	04	00	00.00	100.00
	3		00	00.00	100.00
16.12.06	1		00	00.00	100.00
	2	03	00	00.00	100.00
	3		00	00.00	100.00
17.12.06	1		00	00.00	100.00
	2	02	00	00.00	100.00
	3		00	00.00	100.00
18.12.06	1		02	40.00	60.00
	2	05	00	00.00	100.00
	3		00	00.00	100.00
19.12.06	1		00	00.00	100.00
	2	03	00	00.00	100.00
	3		00	00.00	100.00
20.12.06	1		00	00.00	100.00
	2	02	00	00.00	100.00
	3		00	00.00	100.00
21.12.06	1		00	00.00	100.00
	2	03	00	00.00	100.00
	3		00	00.00	100.00
22.12.06	1		01	20.00	80.00
	2	05	00	00.00	100.00
	3		00	00.00	100.00
23.12.06	1		00	00.00	100.00
	2	04	00	00.00	100.00
	3		00	00.00	100.00
24.12.06	1		00	00.00	100.00
	2	05	00	00.00	100.00
	3		00	00.00	100.00
25.12.06	1		00	00.00	100.00
	2	03	00	00.00	100.00
	3		00	00.00	100.00
26.12.06	1		01	20.00	80.00
	2	05	00	00.00	100.00
	3		00	00.00	100.00

Date	Plate number	Number of colonies before	Number of colonies after	% of colonies after	% Reduction
27.12.06	1		00	00.00	100.00
	2	03	00	00.00	100.00
	3		00	00.00	100.00
28.12.06	1		00	00.00	100.00
	2	04	00	00.00	100.00
	3		00	00.00	100.00
29.12.06	1		00	00.00	100.00
	2	03	00	00.00	100.00
	3		00	00.00	100.00

Average reduction in Sabouraud's dextrose agar plates;  $94.30 \pm 09.7900$  (at the time of performance of Agnihotra);  $100.00 \pm 00.0000$  (after 10 minutes);  $100.00 \pm 00.0000$  (after 20 minutes)

tion in the microbial count to a great extent. The Agnihotra is very effective on fungal spores. There was a reduction of 100% in fungal spores, because of our Agnihotra.

The plates exposed just after Agnihotra showed a reduction of about 89-94% after 10 minutes. We found that its effect was pronouncing and up to 98-100% reduction was noticed. After 20 minutes there was 100% reduction in fungal spores.

Similarly effect of Agnihotra on bacterial population also showed good results. The reduction was noticed in the bacterial colonies if about 91-94%.

The percentage of reduction in bacterial colonies was increasing with time after Agnihotra. Just after Agnihotra 88-91% of reduction was found. Then after 10 minutes of Agnihotra up to 93% of reduction was noticed. After 20 minutes, the pronounced effect of Agnihotra revealed a reduction of about 94-96% in bacterial population.

## DISCUSSION

The gases were produced after burning of various substances of fire oblations (i.e., ghee, rice) and diffused in surroundings. These gases may have acted as antimicrobial agents in two ways. One way may be by its mechanical action; it would have carried the microbes to the top. The other one may be the action of gases, potentiated by the increased temperature that causes the decline in relative humidity of the atmosphere. The diffusion of gases takes some time. As the time increases the closed room gets saturated with the gases. These gases kill or inhibit various microbes present in air by acting as an antimicrobial agent.

The effect of Agnihotra in different seasons was also

checked. The Agnihotra was found to be effective in all seasons and its positive effects were not at all altered by the changes in season. In rainy season when the atmosphere is saturated with humidity then also Agnihotra was able to reduce the number of air spora. The Agnihotra could reduce the microbial pollution of air in all seasons throughout the year.

According to our results it is evident that Agnihotra is an effective antimicrobial agent. There was a 100% reduction in fungal count and 91-94% reduction in bacterial count. The fungal spores are present in the air in free form but the bacterial cells are normally present as droplets. Sometimes bacteria may also produce endospores which are very much resistant. In contrast the fungal spores are not so much resistant ones. This may be one of the reasons for the 100% reduction in fungal count and 91-94% reduction in bacterial count.

Thus we can conclude that the Agnihotra is not a mere fumigation effect but much more than that. The combined effect of the ingredients and the materials used in Agnihotra proves antimicrobial property. They are also having power of healing the atmosphere. It is a powerful weapon to check the atmospheric pollution. The Agnihotra can be performed by any one, in any season all over the world. But only thing is to follow the actual procedures of Agnihotra.

The resultant healing energies emanating from Agnihotra rise high up in the space and cause pure rains.

### CONCLUSION

Agnihotra is a practicable, result oriented scientific practice. The method is very simple, ingredients are easily available the time to be spared for the practice is not a bother at all, it is not expensive also. The Agnihotra can be performed by each and everyone irrespective of their religion.

Agnihotra is a beneficial practice which straightens everything. It is a sure remedy to heal atmosphere. It is a perfect method and a best care taker. Agnihotra balances the cycle of nature and nourishes human life. This process purifies the atmosphere and in turn helps reduce the tension on the stressed mind. The beneficial effect of Agnihotra is also carried to the world of plants and animals.

Agnihotra creates pure, clean and healing atmo-

sphere. It cleanses the negative effects of pollution. Today Agnihotra is the need of time. The daily practice of Agnihotra is as necessary and essential for human subsistence as is the air we breathe, the water we drink, the food we eat.

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