

Vedic Pravargya, a Thermodynamic Process, That Boosts Immunity, Reduces Pollution, and Mitigate COVID-19 Like Viruses

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Abstract - Pravargya is Vedic and scientific process that generates very high Sun surface like temperatures in the range of 5,000 K to 9,225 K by producing a fireball (fire column) for shorter periods (1 to 3 seconds) that can produce UV (ultraviolet) rays to mitigate viruses/bacteria. The fireball helps converting fatty acids in the ghee, high nutrient organic compounds present in cow milk and goat milk into vapors having kinetic energies capable of increasing immunity, reducing the bacteria/virus counts, reducing air, water, and soil pollution in and around the vicinity where Pravargya process is conducted.

Index Terms - Pravargya, kinetic energy, fireball process, yajna, cow ghee

I. INTRODUCTION

Yajna or Agnihotra or Medicinal Smoke, is a Vedic process, conducted in a fire pit, known as, Kunda, where fire is initiated using wood pieces (called as Samidhas) along with cow ghee (butter turns to ghee on heating) while chanting mantras (hymns). Various food materials, precious metals, and scented materials such as sandalwood, and herbs are offered (called ahuthis) in the fire at regular intervals. Yajna fire may generate high temperatures anywhere from hundreds to thousands of degrees Celsius. Vapors and particles produced from the yajna Kunda get into atmosphere and purify the surrounding air as proved by many experiments [1].

Pravargya is another Vedic and scientific process usually takes place along with the yajna. In Pravargya, a combination of fresh cow and goat milk is poured into the boiling cow ghee pot, the water part (about 87%) vaporizes instantly due to high heat quantity. The change from liquid to vapor expands water present in the milk to several hundred times and pushes the fire produced by the combustion of ghee in all directions that spontaneously produces the fireball. The fatty acids from the cow ghee, organic compounds and minerals present in cow and goat milk are responsible for high heat and emission spectra with different colors. The process creates vapors of many particles that have great kinetic energies. These vapors are capable of rapidly increasing immunity in the human beings, reduce organic particulate pollution, air pollution and water pollution in and around the vicinity [2].

II. BACKGROUND

Vedas are the most prominent ancient science with a collection of technologies and methodologies including space / atmospheric science, and life sciences. One of the key Vedic methodologies is practicing Yajna/Agnihotra. It is recommended to conduct Yajna daily to consistently bring the benefits to all the living beings – human, animals, and trees. Meticulous efforts had been put by rishis (ancient scientists) in converting the cryptic Vedic knowledge into more practical and simple-to-implement methods for reducing air pollution and boosting immunity.

Pravargya process converts rich organic, nutritious, and medicinal compounds from cow ghee, cow milk, and goat milk, into vapors of high kinetic energy which infuse into atmosphere for good. Cow ghee gets boiled in a clay pot (called Mahavira) with the help of selected wood pieces. The temperature of the fire due to wood pieces may vary anywhere from 750 K to 1,500 K. When the ghee reaches boiling point (523 K), freshly collected cow and goat milk are mixed and then poured in the ghee pot. End results would generate various UVA (Ultraviolet-A) rays along with vapors of high kinetic energies. This phenomenon is going to last for a few quick seconds. This rapid chemical and physical reaction generate the great benefits to various aspects including reducing the pollution, reducing the bacteria/virus counts and increasing the immunity of the human beings in and around of the place where this process is being conducted. The size of the spread would depend on the process duration, how many times in each day, the process is repeated, and the amount of material being used each time.

We conducted Pravargya, as an experiment, multiple times in various locations by following the procedure as explained in the Vedic texts. We also conducted yajna along with Pravargya to extend the benefits. We have collected pollution and weather data points from various sources in each experiment, examined and published the results onto various international journals.

III. IDENTIFY AND RESEARCH

In this paper we discuss the effects produced during the Pravargya process in which cow and goat milk mixture at a temperature of about 25⁰ C is suddenly exposed to a temperature of 250⁰ C when the mixture is poured in the boiling ghee.

In a 500 ml open mud pot placed on a low pedestal surrounded by burning wood sticks, pure cow ghee is poured to the brim and heated to its boiling point. When the ghee approaches boiling point, about 200 ml of freshly collected mixture of cow and goat milk is carefully poured into the boiling ghee pot with the help of long spoon. The water content in the milk at a temperature of 25⁰ C is suddenly receives heat from the boiling ghee at 250⁰ C. Since water (specific gravity = 1) has a greater density than boiling cow ghee (specific gravity = 0.93) [3], milk mixture travels to the bottom of the pot while pushing some ghee out of the container. This expelled ghee catches fire and the water in the milk mixture becomes superheated. Since the pot is open, water becomes steam and rushes out with great force and creates a fireball (Figure - 1). Fireball is due to the burning wood, ghee combustion, and expansion of superheated water into steam. The fireball is spontaneous and lasts for few seconds while rising to a height of 10 to 12 ft or so. During this time, the event was captured in a video and analyzed it for the colors and temperatures [2]. The process of superheated water becoming steam increases the volume at constant atmospheric pressure.



Figure – 1 Fireball produced during the pravargya process.

The fireball (or column of fire) radius generally varies between 0.75 meter and one meter or so and the height to which this column rises is about 2 to 4 meters or more. The volume of the fireball contains the expanding steam that is produced from the superheated water present in the milk, and combustion of ghee fatty acids. Water is superheated at 250⁰ C and is converted to steam at one atmospheric pressure. Along with the superheated steam all the organic compounds, and minerals present in the milk mixture and ghee are separated and create the fireball.

Ihsan [4] found that goat milk has 88.5% of water and cow milk has about 87.55% of water. During Pravargya process, mixture of goat and cow milk is poured in the boiling cow ghee container. The boiling cow ghee is about 250⁰ C and the milk mixture is at room temperature (about 25⁰ C). Under these conditions, water in the milk mixture is suddenly superheated to 250⁰ C. We know that water at 250⁰ C is superheated and is between its boiling point of 100⁰ C and its critical temperature 374⁰ C. As the temperature of the water increases specific heat, and self-ionization increases [5] that in turn increases the concentrations of OH⁻ and H⁺ ions while maintaining neutral pH and decreasing its polar nature. Surface tension, dielectric constant, and viscosity decreases with increase in temperature of water [6]. It is found that [7] solubility of organic compounds increases in superheated water and we can consider it as a benefit to the environment when compared to organic solvents. The amount of heat required to convert one kilogram of water from 25⁰ C to steam at 250⁰ C is about 2,870 kJ/kg. Calculation is based on the data taken from Engineering Toolbox [8]. Alena et al [9] used subcritical water with varying temperatures (25⁰ C to 300⁰ C) to sequentially extract wood smoke particulate and diesel exhaust particulate from the atmosphere. Mohammed et al [10] extracted essential oils from coriander seeds using super critical water extraction and found that the essential oils were more concentrated than the other conventional methods.

Superheated water has emission and absorption spectra in short and long wavelength range in μm. Shau-Yau Ho [11] observed several emission and absorption lines in short (3.29 μm and 5.06 μm) and long (7.91 μm and 16.25 μm) wavelength range for steam heated to 873 K.

IV. RESULTS

The following aspects are analyzed in the effects produced in Pravargya process.

- (A) Why does the Pravargya process erupt a fireball (or fire column) that big?
- (B) What is responsible for the colors that were observed during the fireball eruption?
- (C) What could possibly be the maximum temperature produced in the fireball?
- (D) Is the process beneficial for air pollution control?
- (E) Does the process decrease the virus/bacterial count?
- (F) Is the process useful for increasing immunity in humans?

(A) *Why does the Pravargya process erupt a fireball (or fire column) that big?*

Heat is given during combustion of the fatty acids of ghee when it comes out of the pot due to eruption of steam from the superheated water. When 200 ml of milk is poured in the pot an equivalent amount (200 grams) of ghee overflows and becomes fuel to the burning wood. Some of the remaining ghee erupts out along with the superheated steam. Therefore, about 100 grams of ghee is erupted along with the steam and combustion gives heat as calculated below. Data given in Table-6 and Table-1 are used for calculating the volume, height, and temperature of the fireball (fire column) that is produced during the Pravargya process. Cow ghee consists of about 70% fatty acids by weight [12]. Table – 1 gives the prominent fatty acids in Cow ghee. In the equations 1 to 6, heat of combustion ‘h’ in kJ/mol, percentage of the fatty acid present (y) in 100 grams of ghee, and molecular weight ‘M’ of the fatty acid in mol are taken to calculate the heat produced in kJ during the combustion process. Sample equation is given below for understanding the calculations. Values of ‘h’ and ‘M’ are taken from Table-6 and value of ‘y’ is taken from Table-1.

$$H = \frac{h \times 100 \times y}{M} \text{ -----(Sample)}$$

$$\text{Heat given by the combustion of Palmitic Acid} = H_1 = \frac{10030.6 \times 100 \times 0.3}{256.42} = 1173.50 \text{ kJ} \text{ -----(1)}$$

$$\text{Heat given by the combustion of Myristic Acid} = H_2 = \frac{8676.7 \times 100 \times 0.11}{228.37} = 417.90 \text{ kJ} \text{ -----(2)}$$

$$\text{Heat given by the combustion of Stearic Acid} = H_3 = \frac{11342.4 \times 100 \times 0.12}{284.484} = 478.44 \text{ kJ} \text{ -----(3)}$$

$$\text{Heat given by the combustion of Butyric Acid} = H_4 = \frac{2183.5 \times 100 \times 0.044}{88.11} = 109.04 \text{ kJ} \text{ -----(4)}$$

$$\text{Heat given by the combustion of Capric Acid} = H_5 = \frac{3492.4 \times 100 \times 0.024}{116.1583} = 72.16 \text{ kJ} \text{ -----(5)}$$

$$\text{Total heat given by the combustion of ghee} = H_6 = 2251.04 \text{ kJ} \text{ -----(6)}$$

This heat of combustion is supplied to the steam for expansion and internal energy as given by the following equation,

$$\frac{3nR(\Delta T)}{2} + P(\Delta V) = 2251.04 \text{ kJ} \text{ -----(7)}$$

Where ‘n’ is the number of moles, ‘R’ is the universal gas constant, ‘P’ is the pressure, ‘ΔT’ is the change in temperature, and ‘ΔV’ is the change in volume of the steam. Since the steam expands at constant pressure of atmosphere, the gas equation for the expanding steam becomes

$$P\Delta V = nR\Delta T \text{ -----(8)}$$

From (7) and (8) we substitute the value of (ΔT) in terms of (ΔV) and obtain,

$$\frac{3P\Delta V}{2} + P(\Delta V) = 2251.04 \text{ kJ} \text{ -----(9)}$$

By substituting P = 101325 N/m² we get the change in Volume as,

$$\Delta V = 8.8864 \text{ m}^3 \text{ -----(10)}$$

If the radius ‘r’ of the fireball is taken as 0.9 m, and height as ‘h’ then the volume of the fireball can be calculated by

$$\pi * r^2 h = 8.8864 \text{ -----(11)}$$

$$h = 3.49 \text{ m} \text{ -----(12)}$$

(B) What is responsible for the colors that were observed during the fireball eruption?

Annamaria et al [13] found that superheated water extracts oxygenated fragrance and flavor compounds rapidly than from steam distillation because it appears that with increase in temperature diffusion also increases. Table – 1 gives the list of fatty acids present in the cow ghee. When the mixture of cow milk and goat milk are poured in the boiling cow ghee in the Pravargya process, the water in the milk gets superheated to 250⁰ C and is capable of rapidly separating the fatty acids. These acids erupt out along with the steam and give emission spectra with different colors as discussed in [2]. Naveed et al [14] studied heating effects at excitation wavelength of 280 nm and observed 552 nm peak for heated ghee with maximum intensity at 250⁰ C but starting from 160⁰ C along with other wavelengths - 620 nm, 390 nm, 440 nm, 460 nm, 490 nm that show gradual decrease in the intensity as temperature rises above 150⁰ C. The 552 nm and 620 nm are attributed to the oxidative products that decompose to secondary oxidation

products. Tables – 2 and 3 give the details of the substances present in the goat and cow milk and Table – 4 gives the details of the substances present in the cow ghee. Table – 5 gives the emission spectral lines ranges of elements - Ca, Na, Fe, and K in the air. In [2] the authors mentioned that the maximum visible wavelength that could be observed in the Pravargya process was about 532 nm and Table – 5 gives the different possibilities of wavelengths that could be obtained from the Pravargya process, if sufficient temperatures were met, to obtain these excitations from the substances given in Tables – 2 to 3.

Table – 1 Prominent Fatty Acids in Cow Ghee [15]

Fatty Acid	Percentage
Palmitic Acid	30
Myristic Acid	11
Stearic Acid	12
Short-Chain Fatty Acids	10.9
Butyric Acid	4.4
Caproic Acid	2.4

Table -2 Goat Milk (100 ml) contains the following.
 Source courtesy USDA [16]

Name	Amount	Unit
Energy	62	kcal
Protein	3.33	g
Total lipid (fat)	3.33	g
Carbohydrate, by difference	5	g
Fiber, total dietary	0	g
Sugars, total including NLEA	5	g
Calcium, Ca	125	mg
Iron, Fe	0	mg
Sodium, Na	50	mg
Vitamin C, total ascorbic acid	1	mg
Vitamin A, IU	125	IU
Fatty acids, total saturated	2.08	g
Fatty acids, total trans	0	g
Cholesterol	10	mg

Table-3 Cow Milk (100 ml) contains the following.
 Source courtesy USDA [16]

Name	Amount	Unit
Energy	62	kcal
Protein	3.33	g
Total lipid (fat)	3.33	g
Carbohydrate, by difference	5.42	g
Fiber, total dietary	0	g
Sugars, total including NLEA	5	g
Calcium, Ca	125	mg
Iron, Fe	0	mg
Sodium, Na	52	mg
Vitamin C, total ascorbic acid	0.5	mg
Vitamin A, IU	125	IU
Vitamin D (D2 + D3), International Units	42	IU
Fatty acids, total saturated	2.08	g
Fatty acids, total trans	0	g
Cholesterol	15	mg

Table-4 Cow Ghee (100 ml) contains the following.
Source courtesy USDA [16]

Name	Amount	Unit
Energy	767	kcal
Protein	26.67	g
Total lipid (fat)	73.33	g
Carbohydrate, by difference	0	g
Fiber, total dietary	0	g
Sugars, total including NLEA	0	g
Calcium, Ca	1733	mg
Iron, Fe	53.33	mg
Potassium, K	1567	mg
Sodium, Na	0	mg
Fatty acids, total saturated	46.67	g
Fatty acids, total trans	0	g
Cholesterol	200	mg

Table – 5 Strong Lines of Different Elements.
Courtesy NIST [17]

Element	Air Wavelength (nm)	
	Minimum	Maximum
Ca II	219.7787	1022.304
Ca I	227.5462	2265.123
Na II	231.565	654.575
Na I	268.034	2337.913
K II	219.000	630.729
K I	299.212	4015.837
Fe II	232.73958	645.638
Fe I	217.80808	1197.30498

Table – 6 Heat of Combustion of Fatty Acids present in Cow ghee

Name of the Fatty Acid	Chemical Formula	Molecular Wt. g/mol	Heat of combustion k J/mol	References
Palmitic Acid	C ₁₆ H ₃₂ O ₂	256.42	10030.6	24
Myristic Acid	C ₁₄ H ₂₈ O ₂	228.37	8676.7	25
Stearic Acid	C ₁₈ H ₃₆ O ₂	284.484	11342.4	26
Butyric Acid	C ₄ H ₈ O ₂	88.11	2183.5	27
Caproic Acid	C ₆ H ₁₂ O ₂	116.1583	3492.4	28

(C) What could possibly be the maximum temperature produced in the fireball?

From equation (8), (10) and n = 11.11 moles (200 ml of milk) we get,

$$\Delta T = \frac{P(\Delta V)}{nR} = \frac{101325 \times 8.8864}{11.11 \times 8.314} = 9748 \text{ K} \text{ -----(13)}$$

$$T_{\max} = 9748 - 523 = 9225 \text{ K} \text{ -----(14)}$$

The maximum temperature of 9,225 K is the possible reason for the 314.5 nm wavelength (UVA) produced during the process that helps mitigate viruses/bacteria count.

(D) Is the process beneficial for air pollution control?

As Venkata et al [2] noticed that when hot cow milk and goat milk combination is offered on top of the boiling ghee, the water part (about 87%) vaporizes instantly due to high heat quantity. The change from liquid to vapor expands water to several hundred times and pushes the fire above it upwards that produces the fireball. These vapors can reduce organic particulate pollution, air pollution and water pollution in and around the vicinity. Venkata [1] concluded that reduced particulate matter (PM₁₀ and PM_{2.5}) in atmosphere for 96 hours, after the yajna and Pravargya process, extended for 50 kilometers. However, the effect would vary based on various aspects including the duration of the yajna and the size of yajna Kunda. Venkata [18] observed that during the yajna, about 5 hours per day for a period of 10 days, PM_{2.5} was reduced by about 35% and PM₁₀ was reduced by about 26% in and around the vicinity. Acidic/basic (pH) levels in the rainwater are above 6.16 (base) indicated that water pollution was reduced as lesser amounts of CO₂, SO₂ and NO₂ due to reduced pollutants in the air.

(E) Does the process decrease the virus/bacterial count?

John et al [19] concluded in their study that at around 70°C (158°F) viruses, specifically, SARS-CoV-2 (COVID-19), the new coronaviruses get destroyed. However, the time it takes to erase the virus completely would depend on how much virus is present on what type of surface. Venkata et al [2] noted that during the Pravargya process - high temperatures get generated for a few quick seconds that are closer to the surface of the Sun. The organic nutrients in cow ghee, cow milk, and goat milk are likely to quickly change states from higher to lower thus release ultraviolet-A (UVA) radiation with wavelength in the range of 320 to 400 nm (nano meters). These UVA rays destroy COVID-19 like viruses and other harmful bacteria in and around the vicinity where Pravargya being conducted. Venkata et al [20] observed that by conducting yajna for about 15 days and conducting Pravargya 4 times in a day along with Yajna (Agnihotra), about 30% more reduction in COVID-19 (coronavirus) active cases compared to the nearby cities, whereas, in the cities far from the yajna location experienced an increase in the COVID-19 active cases during the same period.

(F) Is the process useful for increasing immunity in humans?

Naveed et al [14] observed that the non-heated ghee peaked at 375 nm, 390 nm, 440-460 nm, 490 nm, 620 – 700 nm and for heated ghee the Fluorescence peaked at 552 nm. Venkata et al [2] interpreted that during Pravargya, ghee temperature rises to 5,446 K before combining with cow and goat milk. Hence, the possibility of safer and beneficial UVA (320 nm to 400 nm) being produced for shorter periods during this process. These UVA rays boost immunity in the human beings. Fereshteh et al [21] noted that COVID-19 effects human immunity system and improving the immunity would result in controlling the virus effect. Healthy nutrients from cow ghee, cow and goat milk vaporize into kinetic energy, due to Pravargya process, and then infuse into atmosphere that stimulate the immunity in all the living beings.

V. CONCLUSION

Pravargya is hidden yet very effective Vedic and scientific process in increasing the immunity in human beings and decreasing the bacteria/virus counts along with reducing the pollution in the air, water, and soil. Big fireball is erupted due to fatty acids of the cow ghee mixed with superheated steam emit spectra with different colors / wavelengths minimum at 532 nm in the visible region and generate temperature of order of 9,225 K that is capable of producing 314.5 nm (UVA). This high temperature may be responsible for the UV rays that could mitigate viruses/bacteria count. Pravargya, a fireball process (or column of fire), miraculously generate rapid high temperatures closer to the Sun surface and soaring kinetic energies through vapors by pouring fresh cow and goat milk into cow ghee pot. The high nutrients from cow ghee, cow milk, and goat milk become vapors; infuse into atmosphere that generate lots positive effects – boosting immunity, reducing the pollution, and mitigating the bacteria/virus counts in and around the vicinity.

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