



## Panchagavya: Nature's Gift for Sustainable Living

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### ABSTRACT

*Panchagavya, a traditional Indian formulation derived from five key cow-based components—cow dung, urine, milk, curd, and ghee represents a sustainable approach to environmental and agricultural practices. This study investigates the preparation and diverse applications of Panchagavya-based products, including Panchagavya fertilizer, neem-infused Panchagavya pesticide, solid and liquid variants of Panchagavya pesticides, Panchagavya vilakku, Sambrani, Utupatti, tooth powder, soap oil, and soap. These innovations are utilized in organic farming, household applications, and personal care. Panchagavya has been shown to enhance soil fertility, improve crop growth and yield, reduce reliance on chemical inputs, and contribute to environmental sustainability. Furthermore, it strengthens plant immunity, making crops more resilient to pests and diseases. This research highlights the multifaceted benefits of Panchagavya as a viable solution for promoting organic agriculture, human health, and ecological conservation, while calling for further scientific studies to validate its efficacy and expand its global adoption.*

**Keywords:** Panchagavya, homemade products, sustainable agriculture, organic farming

### 1. Introduction

Panchgavya, an age-old Indian tradition, leverages the therapeutic and agricultural benefits of five cow-derived products: milk, ghee, urine, dung, and curd. Celebrated in Indian culture, the cow is venerated as "Gaumata" and "Kamadhenu" due to its vital contributions. Panchgavya has been extensively utilized in Ayurveda for its medicinal properties in addressing various health conditions. In addition to its significance in traditional medicine, Panchgavya has gained recognition in organic farming as an effective natural bio-fertilizer and pesticide, highlighting its holistic and sustainable applications in health and agriculture [1].

Traditional agriculture has long been regarded as a collaborative endeavor between humans and cattle. In recent years, there has been growing interest in the utilization of individual animal products and their formulations. Among these, Panchagavya has gained significant attention as one of the most prominent and widely discussed preparations. The term "Panchagavya" refers to a blend of five products derived from the cow-milk, curd, ghee, urine, and dung. This formulation, deeply rooted in Ayurvedic tradition, is celebrated for its diverse applications in agriculture, medicine, and sustainable practices [2].

This article aims to promote the use of "Panchagavya Therapy/Chikitsa" as an alternative prophylactic and therapeutic approach for improving livestock and poultry health, as well as human well-being, while honoring the sacred role of the cow in the ecological chain [3]. Panchagavya products have demonstrated effectiveness in treating various human ailments and enhancing immunity, thereby boosting the body's resistance to infections [4]. The article discusses the composition, functions, health benefits, and medicinal properties of Panchagavya products, supported by available scientific evidence [5]. Additionally, Panchagavya is highlighted as an economical, eco-friendly solution with no known side effects, making it a sustainable choice for health and agriculture [6].

This study emphasizes the diverse applications, benefits, and significance of Panchagavya in daily life, supported by established scientific evidence. The primary aim is to explore and develop Panchagavya-based products, including natural bio-fertilizers and pesticides, to enhance crop productivity, promote biodiversity, and improve soil fertility. These innovations aim to provide farmers with cost-effective and eco-friendly solutions, contributing to sustainable agriculture and better livelihoods. Additionally, the research focuses on creating household products such as soaps and Sambrani, offering environmentally friendly alternatives for human use while supporting ecological well-being.

## **2. Materials and Medods**

### **Materials of Panchagavya**

Cow-derived products include dung, urine, milk, curd, and ghee.

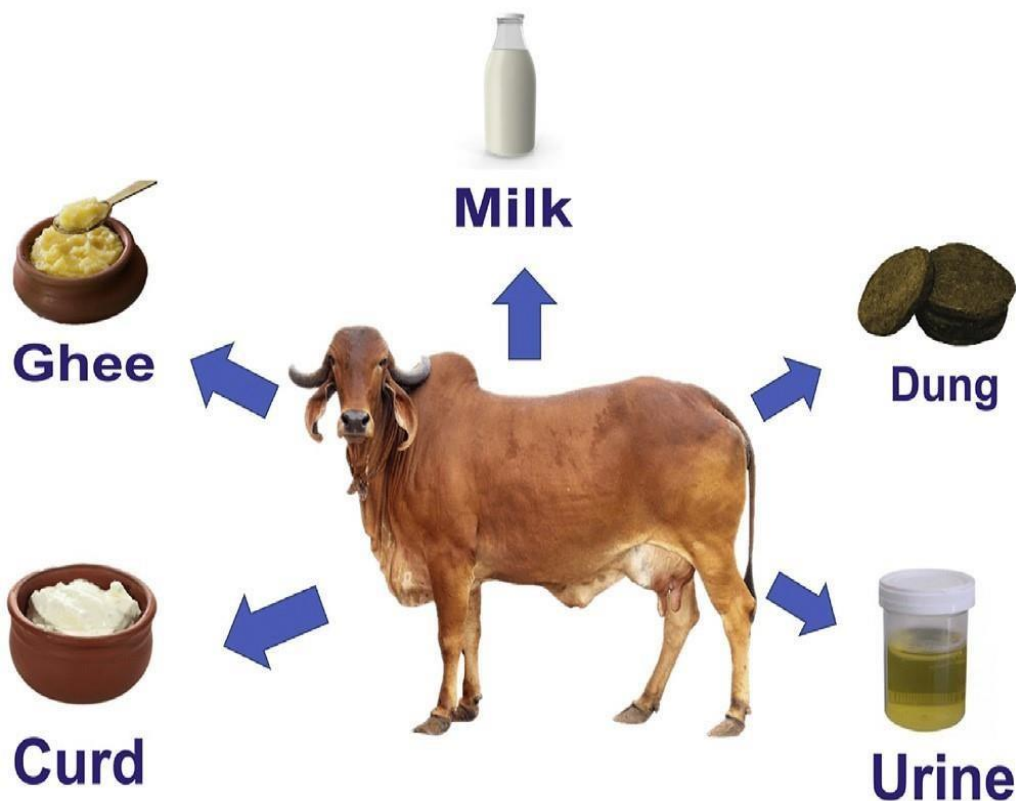
### **Methods of Preparing Panchagavya**

**Collection:** Gather fresh and high-quality cow-derived products, ensuring their purity and cleanliness for optimal effectiveness.

**Mixing:** Combine the collected ingredients—cow dung, cow urine, cow milk, curd, and ghee in precise proportions to achieve the desired composition and balance.

**Fermentation:** Allow the mixture to undergo fermentation over a specified period, creating an environment for the growth of beneficial microorganisms that enhance its properties.

**Straining:** Once fermentation is complete, strain the mixture to remove any solid residues, resulting in a nutrient-rich liquid ready for use.



**Fig. 2.1. Components of Panchagavya**

**Table 1. Ingredients And Preparation of Panchagavya Products**

No.	Materials	Methods
<b>1.</b>	<b>Ingredients And Preparation of Panchagavya Fertilizer</b>	
	Cow dung - 2 kg Cow ghee - ½ kg Cow Urine - 2 litres Cow milk - 1 litres Cow curd - 1 litres Water - 2 litres Jaggery - 1 kg Sugar Cane - 1 kg Tender coconut water - 1 litre Well ripened poovan banana - 12 nos.	<p>To create Panchagavya fertilizer, begin by combining 2 kg of cow dung with 0.5 kg of cow ghee in a wide-mouthed clay pot. Place the mixture in a shaded area and cover it with a wire mesh or plastic mosquito net to prevent contamination by houseflies. Allow the mixture to ferment for 7 days in the shade, stirring it twice daily—once in the morning and once in the evening.</p> <p>After the initial fermentation period, transfer the mixture to airtight containers and store them in a cool, shaded place. Open the lid every two to three days to release gases formed during ongoing fermentation. Separately, mix 2 liters of cow urine with 2 liters of water and allow this solution to sit for 15 days, stirring it regularly, morning and evening.</p> <p>After 15 days, add the following ingredients to enhance the fermentation process and minimize any unpleasant odor: 1 liter each of cow milk, cow curd, and tender coconut water; 1 kg of jaggery; 1 kg of sugarcane; and 12 fully ripe Poovan bananas. The Panchagavya stock solution will be ready for use after a total of 30 days.</p>

2.	<b>Ingredients And Preparation of Panchagavya Herbal Fertilizer</b>	
	<p>Cow dung - 2kg  Cow urine - 2lt  Cow milk - 1lt  Cow ghee - 500g  Cow curd - 1lt  <i>Lantana camara</i> -500g  <i>Pongamia pinnata</i> - 500g  <i>Datura metel</i> - 500g  <i>Adathoda vasica</i> -500g  <i>Vitex negundo</i> - 500g  <i>Calotropis gigantea</i>-500g  <i>Jatropha curcas</i> - 500g  <i>Leucas aspera</i> - 500g  <i>Azadirachta indica</i> - 500g</p>	<p>To prepare the Panchagavya solution, mix the following ingredients: 2 kg of cow dung, 2 liters of cow urine, 1 liter of cow milk, 500 g of cow ghee, and 1 liter of cow curd. Additionally, collect 500 g each of the following plants: <i>Lantana camara</i>, <i>Pongamia pinnata</i>, <i>Datura metel</i>, <i>Adathoda vasica</i>, <i>Vitex negundo</i>, <i>Calotropis gigantea</i>, <i>Jatropha curcas</i>, <i>Leucas aspera</i>, and <i>Azadirachta indica</i>.</p> <p>Plant extracts are prepared by soaking the foliage of these plants in cow urine in a 1:1 ratio for 10 days. Once fermented, the extracts are filtered and added to the Panchagavya solution at the rate of 1 liter of each extract to 5 liters of the solution. The mixture is then left to ferment for 25 days, with regular stirring to ensure uniform blending.</p> <p>After 25 days, the Panchagavya solution is filtered to remove solid residues, preventing clogging in sprayer nozzles. The resulting herbal fertilizer is ready to be applied to plants and used as a foliar spray.</p>
3.	<b>Preparation of Panchagavya Vilakku</b>	
	<p>Cow Ghee - 10 g  Cow dung - 500 g  Cow urine - 250 ml  Cow Milk -100 ml  Cow Curd - 100 ml  Cotton wick</p>	<p>To prepare the Panchagavya Vilakku, gather the following ingredients: 10 g of cow ghee, 500 g of cow dung, 250 ml of cow urine, 100 ml of cow milk, and 100 ml of cow curd. You will also need a cotton wick.</p> <p>Start by cleaning and preparing the lamp. In a separate container, mix 1 part cow ghee with 2 parts powdered cow dung to create the base for the lamp. Add a few drops of cow urine to the mixture and stir thoroughly.</p> <p>Once the base is ready, pour in the cow milk and curd, filling the lamp to about three-quarters of its capacity. Place the cotton wick in the center of the lamp.</p> <p>Finally, light the wick, and the Panchagavya Vilakku is now ready for use.</p>
4.	<b>Preparation of Panchagavya Panchagavya Sambrani</b>	
	<p>Cow dung - 500 g  Cow urine - 250 ml  Cow milk - 100 ml  Cow ghee - 10 g  Cow curd - 100 g  Sambrani - 50 g  Karpuram - 50 g</p>	<p>To make Panchagavya Sambrani, gather the following ingredients: 500 g of cow dung, 250 ml of cow urine, 100 ml of cow milk, 10 g of cow ghee, 100 g of cow curd, 50 g of sambrani, and 50 g of camphor (karpuram).</p> <p>Begin by drying the fermented LP mixture. Once dry, combine it with turmeric powder, neem oil, or neem leaves to boost the effectiveness of the Panchagavya Sambrani.</p> <p>After thoroughly mixing, store the preparation in an airtight container to maintain its potency. The Panchagavya Sambrani is now ready for use.</p>
5.	<b>Preparation of Panchagavya Neem – Based Pesticides</b>	
	<p>Neem leaves /seeds  Panchagavya  Water</p>	<p>To prepare a Neem-Based Panchagavya Pesticide, begin by gathering 1 kg of fresh neem leaves. Wash the leaves thoroughly, dry them, and grind them into a fine powder. Next, combine 100 g of the neem powder with 1 liter of liquid</p>

	Soap / emulsifier Storage containers Sprayer / drencher	Panchagavya. Add 10 ml of soap or another emulsifier to the mixture and stir well to ensure all ingredients are fully blended. Once prepared, transfer the pesticide to an airtight container to maintain its effectiveness. The Neem-Based Panchagavya Pesticide is now ready for application.
6.	<b>Preparation of Panchagavya Solid Panchagavya Pesticide</b>	
	Cow dung - 500 g Cow urine - 250 ml Cow milk - 250 ml Cow ghee - 25 g Cow curd - 100 ml Neem powder - 50 g Turmeric powder - 25 g	To prepare Solid Panchagavya Pesticides, begin by gathering the following ingredients: 500 g of cow dung, 250 ml of cow urine, 250 ml of cow milk, 25 g of cow ghee, 100 ml of cow curd, 50 g of neem powder, and 25 g of turmeric powder. Start by mixing 100 g of neem powder with 1 kg of solid Panchagavya. Then, add 50 g of turmeric powder and 20 g of red chili powder to the mixture. Stir all the ingredients thoroughly until a uniform blend is achieved. Finally, store the prepared Soil Panchagavya Pesticides in an airtight container to maintain its potency and effectiveness.
7.	<b>Preparation of Panchagavya Uthupatti</b>	
	Cow urine Cow dung Cow milk Cow ghee Curd Water Wooden spoon Mud pot / ceramic container	To prepare Panchagavya Uthupatti, begin by gathering fresh cow urine, dung, milk, ghee, and curd. Dry the cow dung in a shaded area and grind it into a fine powder. Boil the cow milk and allow it to cool. In a mud pot or ceramic container, combine 1 liter of cow urine, 1 kg of powdered cow dung, 1 liter of cooled cow milk, 100 g of cow ghee, and 100 g of curd. Add 2 liters of water to the mixture. Heat the mixture on a low flame, stirring continuously, until it thickens and reduces to a quarter of its original volume. This step is essential for the preparation of Panchagavya Uthupatti. Once the mixture has cooled, transfer it to an airtight container to preserve its potency.
8.	<b>Preparation of Panchagavya Tooth Powder</b>	
	Cow dung Cow urine Cow milk Cow ghee Curd Neem powder Turmeric powder Triphala powder Salt	To prepare a natural tooth powder, begin by drying cow dung in the shade and grinding it into a fine powder. In a separate bowl, mix cow urine, cow milk, cow ghee, and curd. Add the powdered cow dung, neem powder, turmeric powder, triphala powder, and salt to the mixture. Thoroughly blend all the ingredients until a uniform consistency is achieved. Next, allow the mixture to dry in the shade for 2-3 days to eliminate excess moisture. Once fully dried, sieve the powder to remove any lumps, resulting in a smooth and effective natural tooth powder.
9.	<b>Preparation of Panchagavya Soap</b>	

	Cow dung - 500 g Cow urine - 250 ml Cow milk - 250 ml Cow ghee - 25 g Cow curd - 100 ml Neem powder - 50 g Turmeric powder - 25 g	Start by mixing 1 liter of Panchagavya with 1 liter of distilled water. Heat 500 g of coconut oil to 40°C. In a separate container, dissolve 100 g of alkali in 200 ml of distilled water. Gradually add the alkali mixture to the heated oil, stirring gently. Next, incorporate the Panchagavya mixture and blend thoroughly. Add a few drops of essential oils for fragrance and additional benefits. Finally, pour the mixture into a soap mold and allow it to set.
10.	<b>Preparation of Panchagavya Soap Oil</b>	
	Cow dung Cow urine Cow milk Cow ghee Curd Coconut oil Palm oil Olive oil Lye (sodium hydroxide) Distilled water Essential oil	<p>Begin by preparing the Panchagavya mixture. Dry the cow dung in a shaded area and grind it into a fine powder. In a bowl, combine cow urine, cow milk, cow ghee, and curd. Add the powdered cow dung to the mixture, stir well, and allow it to sit for 24 hours.</p> <p>Next, prepare the oil blend by mixing coconut oil, palm oil, and olive oil in a separate bowl. In another well-ventilated area, mix lye with distilled water, stirring until the lye is completely dissolved.</p> <p>To make the soap, gradually add the lye solution to the oil blend while stirring continuously. Then, incorporate the Panchagavya mixture into the oil-lye blend, stirring until the mixture achieves a uniform consistency. Pour the mixture into a soap mold.</p> <p>Allow the soap to cure for 21-28 days. Once cured, cut the soap into bars. Your Panchagavya Soap Oil is now ready for use.</p>

### 3. Results

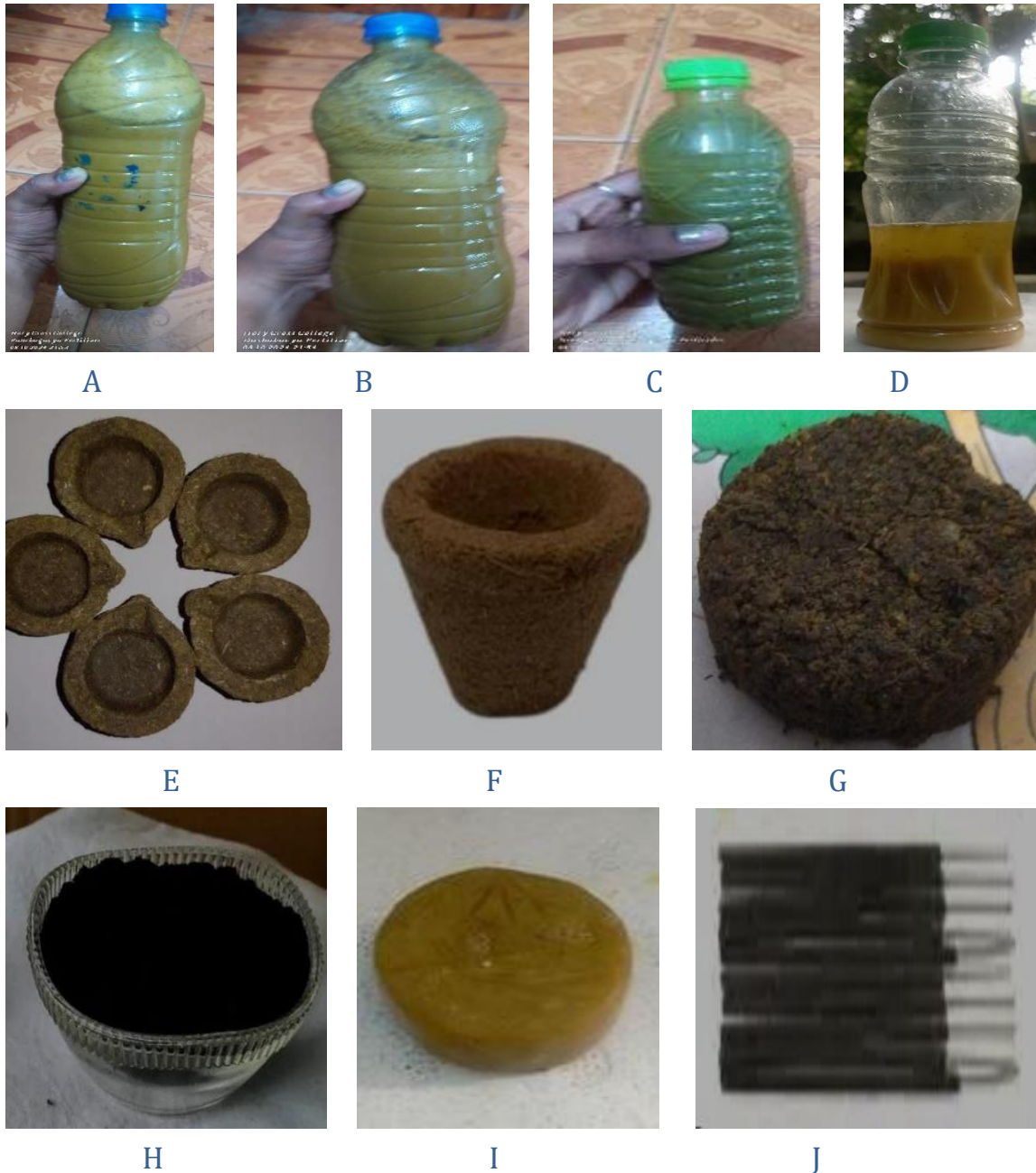
In this study, various Panchagavya-based products were developed, including Panchagavya fertilizer, herbal fertilizer, lamp (vilakku), incense (sambrani), incense sticks (uthupathi), tooth powder, soap, and soap oil. The research further investigated their potential applications, therapeutic benefits for human health, eco-friendly nature, and significance in fostering sustainable agricultural practices. The composition, functions, health benefits, and medicinal properties of each Panchagavya product are detailed in Plate 1 & Table 2.

**Table 2. Composition, Functions, Health Benefits and Medicinal Effects of each Panchgavya Products**

Sl. No	Materials	Functions	Composition	Health benefits	Medicinal effects
1.	<b>Cow Dung</b>	Soil condition and fertilizer, Improve soil structure and water-holding capacity, Supports beneficial microorganisms, Provides essential nutrients (NPK and	Minerals, Vitamins Nitrogen, Potassium, oxygen, Cellulose, Hemicellulose, Mucus, Lignin	Increase Soil Fertility, Promote worm Growth, Organic manure Gobar Gas Plant Preparation of Herbal Tooth Paste	Antifungal, Antibacterial, Skin tonic, Antimalarial, Anti-TB, Increase Vision, Treat Boils and heal rashes, Treat psoriasis and

		micronutrients)			Eczema
2.	<b>Cow Urine</b>	Antibacterial and antifungal properties, Stimulates plant growth and developments, Enhances soil fertilities, Repels pests and diseases, Provide essential nutrients (NPK and micronutrients)	Urea, Uric Acid, Creatinine, Enzymes, Vitamins A, B, C, D, E, Hormones, Calcium, Iron, Magnesium, Phosphorus	Enhances immunity, detoxifies body, improves digestion, boosts metabolism	Antibacterial, Antifungal, Anticancer, Antioxidant, Antimicrobial, Treats skin diseases, Anti-diabetic
3.	<b>Cow Milk</b>	Provide essential nutrients and amino acids, Stimulated plants growth and water-holding capacity, Supports beneficial microorganism, Provide essential nutrients.	Proteins, Carbohydrates, Fats, Vitamin A, B12, D, Calcium, Potassium, Magnesium, Phosphorus	Promotes bone health, improves vision, enhances immunity, strengthens muscles	Antacid, Anti-inflammatory, Improves gut health, Treats dehydration, Enhances brain function
4.	<b>Cow Ghee</b>	Soil conditioner and fertilizer, Improve soil structure and water-holding capacity, Support beneficial microorganism.	Essential Fatty acids, Omega 3 & 9, Vitamin-A, D, E, K, Short Chain fatty acids	Improves digestive system Immuno modulatory, Prevent CVD, Beauty enhancer, Memory enhancer, Blood purifier	Enhance Vision, Wound healing, Immuno-stimulant, Treat Skin Disease, Anti-asthmatic, Anti-neoplastic, Antiinflammatory Anti-cholinergic
5.	<b>Cow Curd</b>	Provide essential nutrients and amino acid, Stimulates plants growth and developments, Enhance soil fertility	Water, Proteins, Vitamin-A,B,D,E, Ca, P, Mg, Zn	Improves digestive System, Enhance Immune System, Improves Quality of Hair	Antifungal, Anti HIV, Treats Digestive ailments, Decrease obesity, Prevent Piles

### Plates 1. Home Made Panchagavya Products



**A. Panchagavya fertilizer    B. Panchagavya Herbal Fertilizer    C. Neem-based Panchagavya pesticide    D. Panchagavya Soap Oil    E. Panchagavya Velakku**  
**F. Panchagavya Sambrani    G. Solid Panchagavya Pesticide    H. Panchagavya Tooth Powder    I. Panchagavya Soap    J. Panchagavya Uthupathi**

#### 4. Discussion

Cowdung is antiseptic and possesses antibacterial and fungicidal components. It contains beneficial microbes such as *Saccharomyces*, *Lactobacillus*, *Bacillus*, *Streptococcus*, and *Candida*, which contribute to its effectiveness [7]. Fungal diseases pose a significant



challenge in agriculture, but cow dung can help mitigate issues caused by pathogens like *Fusarium oxysporum*, *Fusarium solani*, and *Sclerotinia sclerotiorum* [8]. Its use in agriculture is vital for maintaining soil health, as it enhances earthworm populations, particularly *Eisenia andrei*, which facilitate nitrification and improve soil fertility [9]. Cow dung also contains essential nutrients such as minerals, vitamins, potassium, nitrogen, oxygen, carbon, cellulose, hemicellulose, mucus, and lignin. Its filtrate, prepared by mixing cow dung with water, is a key ingredient in ointments for treating severe skin conditions like psoriasis, eczema, and gangrene [10]. Additionally, dried cow dung cakes serve as an eco-friendly fuel source for cooking, reducing dependence on alternative energy while purifying the air and eliminating airborne pathogens in rural India. Biogas plants utilize cow dung to produce methane gas, which is used for cooking and electricity generation [5]. Furthermore, cow dung's microbial richness makes it effective for degrading waste from urban and hospital environments [7].

Cow urine, commonly known as "Gaumutra," is a non-toxic liquid excreted by cows and holds significant importance in Ayurvedic texts. Recognized for its medicinal properties, it is traditionally used to treat over 3,000 ailments and severe diseases, enhancing overall quality of life [2]. It has been utilized in addressing conditions such as cancer, diabetes, hypertension, asthma, psoriasis, eczema, ringworm, heart disease, artery blockage, arthritis, thyroid issues, ulcers, constipation, and various gynecological disorders [10], nephroprotective property [7], analgesic activity [11], Anti-haemorrhoid effects [12,13], Antimicrobial activity [14], free radical scavenging activity [15], Anti-cancer effects [13], antineoplastic agent [13,16]. In addition to its therapeutic uses, cow urine mixed with neem leaves serves as an effective biopesticide. Composed of 95% water, 2.5% urea, and 2.5% enzymes, hormones, salts, and minerals, cow urine helps boost the immune system. It also contains essential vitamins, including A, B, C, D, and E, further enhancing its health benefits [2].

According to Ayurveda, cow milk provides unique nourishment that is unmatched by other food sources. It is valued for its extensive medicinal and health benefits, and is often used as a substitute for breast milk in infants. Cow milk plays a crucial role in the development of teeth and bones [17], supports heart health, and has a wide range of therapeutic effects [10]. approximately 4.6% lactose, 4.65% fat, 0.54% minerals, 3.4% proteins, and 86% water. The proteins in cow milk include 27% beta-casein, 9% gamma-casein, 36% alpha-casein, and 27% peptides. Casein constitutes about 3% of the milk and is found in a colloidal form, along with pigments like xanthophyll, carotene, and riboflavin [18].

In addition to these proteins, milk is an excellent source of essential fatty acids, calcium, and phosphorus, and contains phospholipids such as cephalin, lecithin, and sphingomyelin. It also provides vitamins A, B2, B3, and K [18,19]. Cow milk helps inhibit the growth of harmful gut bacteria while promoting beneficial gut flora [20], Milk enzymes like xanthine oxidase, lactoperoxidase, and lysozyme have antibacterial properties, and peptides such as beta-casomorphins, exorphin and seraphim are known for their anti-diarrheal effects [21], Cis-isomer of linoleic acid present has antineoplastic activity. Additionally, the cis-isomer of linoleic acid found in milk has antineoplastic activity, and milk has shown anticancer properties against skin, colon, and breast cancers [22].

Cow curd, also known as yogurt or "Dahi," is a valuable by-product of cow milk, consumed globally for its rich nutritional content and health benefits. Recognized as one of the healthiest foods, it is made by fermenting cow milk with microorganisms such as *Streptococcus*, *Acidophilus*, and *Lactobacillus* [23]. Curd is packed with essential nutrients, including water, proteins, and vitamins A, B, D, and E. It also contains important minerals like calcium, phosphorus, magnesium, and zinc [24]. A significant source of probiotics, curd contains beneficial microorganisms that offer various health benefits when consumed. Lactic acid bacteria in curd produce metabolites such as cyclic dipeptides, phenyl lactic acid, and antifungal compounds. These bacteria also contribute protein-rich compounds and 3-hydroxylated fatty acids, further enhancing its nutritional and therapeutic properties [5,25].

In Ayurveda, cow's ghee is regarded as the most beneficial type of fat for human consumption. Traditionally prepared cow ghee is rich in nutritional value, offers medicinal benefits, and supports overall health. The preparation process involves heating butter derived from cow milk at a high temperature until all moisture is eliminated [26]. It is especially beneficial for individuals with high blood cholesterol, as it is packed with essential nutrients. Regular consumption of cow ghee enhances physical and mental strength, supports bodily health, and promotes vitality. Additionally, it helps detoxify the body and improves eyesight, supports tendon and muscle health, and keeps bones strong yet flexible [10]. Cow ghee, when combined with *Aegle marmelos* leaf extract, has shown to significantly accelerate wound healing within eight days [27,28]. When combined with *Aloe vera*, it also demonstrates wound healing potential within 21 to 24 days. Cow ghee is effective in addressing Computer Vision Syndrome (CVS), a condition causing eye dryness, burning, itching, and redness. Thanks to its vitamin A content and lubricating properties, cow ghee helps maintain moisture on the eye's surface, preventing dryness and vision impairment [11].

Panchagavya is widely used as both a liquid and solid fertilizer, as well as a biopesticide in agriculture, significantly enhancing crop growth and yield. It promotes beneficial soil microorganisms around the plant roots, improving soil fertility by increasing organic matter, macro and micronutrient levels, and nutrient uptake by plants. This helps maintain overall soil health [29]. Spraying panchagavya on plant leaves leads to the growth of larger leaves and a denser canopy, boosting photosynthesis and enhancing the production of metabolites and photosynthates [30]. Additionally, it improves the shelf life, taste, and quality of fruits, grains, and vegetables, while encouraging side shoot development from the trunk, resulting in more fruit-bearing branches. The treatment also strengthens root systems, helping crops stay fresher longer while absorbing more nutrients and water [31].

From an environmental perspective, Panchagavya helps reduce the reliance on chemical inputs, improves soil health, and supports biodiversity. It enhances ecosystem services, reduces water pollution, and contributes to climate change mitigation. Socially, Panchagavya-based products promote food security, improve nutrition and health, empower rural communities, foster social inclusivity, and help preserve traditional knowledge. However, the benefits of Panchagavya should not be confined to ancient texts; scientific research is essential to validate its biological activities, ensure safety, and establish standardized guidelines. Rigorous experimentation is necessary for each product to confirm its composition, chemical properties, pharmacological effects, safety, toxicity profile, and the mechanisms through which its active components function. Additionally, it is crucial to raise public awareness and promote Panchagavya products to garner global recognition of India's rich traditional practices and knowledge.

## 5. Conclusion

In this study, several products were developed using Panchagavya, a traditional organic formulation. These products include Panchagavya fertilizer, herbal fertilizer, lamps, incense, tooth powder, soap, and oil. Panchagavya-based products are not only environmentally friendly but also show potential for therapeutic applications, benefiting both human health and the environment while promoting sustainable organic farming practices. Overall, this article highlights that integrating organic farming with traditional inputs like Panchagavya provides a viable, sustainable alternative to conventional farming, supporting healthier food production and contributing to environmental preservation.

## References

1. Shah CP., Patel DM., Dhama PD., Kakadia J., Bhavsar D., Vachhani UD., Joshi VJ. In vitro screening of antibacterial activity of cow urine against pathogenic human bacterial

- strains. *International Journal of Current Pharmaceutical Research* 2011; 3(2): 91 - 92.
2. Mohanty I., Senapati MR., Jena D., Palai S. Diversified uses of cow urine. *International Journal of Pharmacy and Pharmaceutical Sciences* 2014; 6(3): 20 - 22.
  3. Garg N., Chauhan RS. Cow therapy as an alternative to antibiotics. In *Indian science congress 2003*; 3 - 7.
  4. Chauhan RS. Cowpathy: a new version of ancient science. *Employment News* 2005; 30(15): 1 - 2.
  5. Dhama KD., Sandip Chakraborty SC., Ruchi Tiwari, RT. Panchgavya therapy (Cowpathy) in safeguarding health of animals and humans-a review. *Research Opinions in Animal and Veterinary Sciences* 2013; 3(6): 170 - 178.
  6. Biswas PM., Pait M. Panchagavya can replace chemical fertilizers and pesticides in agriculture. *The Arunachal Times* 2015; 11.
  7. Umanu G., Nwachukwu SCU. Olasode ok. Effects of cow dung on microbial degradation of motor oil in lagoon water. *Global Journal of Biotechnology and Biochemistry* 2013; 2(4): 542 - 548.
  8. Basak AB., Lee MW., Lee TS. In vitro inhibitory activity of cow urine and dung to *Fusarium solani* f. sp. *cucurbitae*. *Mycobiology* 2002; 30(1): 51 - 54.
  9. Hand P., Hayes WA., Satchell JE., Frankland JC. The vermicomposting of cow slurry, 'Earthworms in waste and environmental management.' edited by Edwards, CA and Neuhauser, EF SPB Academic Publishing, Netherlands 1988; 49 - 63.
  10. Divya Jyoti Jagaran Sansthan. Kamdhenu; 2014. <https://vimeo.com/14716749>
  11. Mulik, S. S., & Bhusari, D. P. (). Conceptual study of goghrita eye drops (aschyotana) in computer vision syndrome. *Asian Journal of Multidisciplinary Studies* 2013; 1(3): 1 - 6.
  12. Gosavi, D., & Jhon, S. Effect of Panchagavya Ghritra on some neurological parameters in albino rats. *Asian Journal of Pharmaceutical Science and Clinical Research* 2012; 5: 154 - 156.
  13. Rani R., Kansal VK. Study on cow ghee versus soybean oil on 7, 12-dimethylbenz(a)-anthracene induced mammary carcinogenesis & expression of cyclooxygenase-2 & peroxisome proliferators activated receptor- $\gamma$  in rats. *Indian Journal of Medical Research* 2011; (5): 497 - 503.
  14. Swaminathan C. *Panchagavya: boon to organic farming*. 1st ed. Lucknow U.P; 2007
  15. Arumugam DG., Sivaji S., Dhandapani KV., Nookala S., Ranganathan B. Panchagavya mediated copper nanoparticles synthesis, characterization and evaluating cytotoxicity in brine shrimp. *Biocatalysis and agricultural biotechnology* 2019;19: 101 - 132.

16. Jain NK., Gupta VB., Garg R., Silawat N. Efficacy of cow urine therapy on various cancer patients in Mandsaur District, India-A survey. *International Journal of Green Pharmacy* 2010; 4(1): 29 - 35.
17. Raut A., Bichile L., Chopra A., Patwardhan B., Vaidya A. Comparative study of amrit bhallataka and glucosamine sulphate in osteoarthritis: Six months open label randomized controlled clinical trial. *Journal of Ayurveda and Integrative Medicine* 2013; 4(4): 229-236.
18. Ananno AA., Masud, M. H., Mahjabeen, M., & Dabnichki, P. (2021). Multi-utilisation of cow dung as biomass. *Sustainable bioconversion of waste to value added products* 215 - 228.
19. Singh A., Agarwal DK. Quality milk from Indian cows. *The Indian Cow*. July-September Issue 2004; 1: 39 - 49.
20. Nautiyal CS. Cow's milk is a novel source of microbial wealth. *Gay Ka Dudh Amrit Hai*. Love4cow Trust, New Delhi 2011; 86 - 98.
21. Bettiol W. Effectiveness of cow's milk against zucchini squash powdery mildew (*Sphaerotheca fuliginea*) in greenhouse conditions. *Crop Protection* 1999; 18(8): 489 - 492.
22. Singh BP., Chauhan RS. Cow Dahi (curd) or Matha (Buttermilk): As a probiotic to control animal diseases. *The Indian Cow* 2004. 2: 6 - 10.
23. Irvine SL., Hummelen R., Hekmat S., Looman CW., Habbema JD., Reid G. Probiotic yogurt consumption is associated with an increase of CD4 count among people living with HIV/AIDS. *Journal of clinical gastroenterology* 2010; 44(9): 201 - 205.
24. Krishnamurthi K., Dutta D., Sivanesan SD., Chakrabarti T. Protective effect of distillate and redistillate of cow's urine in human polymorphonuclear leukocytes challenged with established genotoxic chemicals. *Biomedical and Environmental Sciences* 2004; 17(3): 247 - 256.
25. Schnurer J, Magnusson J. Antifungal lactic acid bacteria as biopreservatives. *Trends food Science Technology* 2005; 16: 70 - 78.
26. Joshi KS. Docosahexaenoic acid content is significantly higher in ghrita prepared by traditional Ayurvedic methods. *Journal of Ayurveda and Integrative Medicine* 2014; 5(2): 85 - 88.
27. Biyani DM., Verma PR., Dorle AK., Boxey V. A case report on wound healing activity of cow ghee. *International Journal of Ayurvedic Medicine* 2011; 2(3): 115 - 118.
28. Shaikh SS., Ukande MD., Murthy K., Shete RV., Solunke RS. Traditional remedies for

- wound healing: a review. *Journal of Drug Delivery and Therapeutics* 2019; 9(4-s): 761 - 764.
29. Beulah A. Growth and development of moringa (*Moringa oleifera* Lam.) under organic and inorganic systems of culture (Doctoral dissertation, Tamil Nadu Agricultural University; Coimbatore 2001).
30. Katyal V., Gangwar KS., Gangwar B. Long-term effect of fertilizer use on sustainability and soil fertility in rice-wheat system in sub-tropical India. *Fertilizer News* 2003; 48(7): 43 - 48.
31. Kaushik SK., Gautam RC. Response of rain fed pearl millet (*Pennisetum glaucum*) to water harvesting, moisture conservation and plant population in light soils. *The Indian Journal of Agricultural Sciences* 1994; 64(12): 858 - 860.