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Critical review of the utilization of *Panchagavya* in the form of Nutraceuticals

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ABSTRACT

Background: In India Cow represents Mother Earth and is commonly called as 'Gaumata' because of its nourishing nature. In *Ayurveda*, since ancient time's cow products have been used for a healthy body, therapeutic purposes and pharmaceutical processes. *Panchagavya* is a mixture prepared by using five ingredients derived from Cow. The three direct ingredients are cow dung, cow urine and cow milk and the two derived products are ghee and curd each of which represents 'Gavya' i.e., obtained from *Gou* (Cow). Each *Gavya* can be used individually or in combination with other products. Any product generated from food sources having additional health advantages in addition to the essential nutritional content contained in foods is considered as a Nutraceutical. The long standing consumer acceptability of nutraceuticals is brought about by their association with conventional medicine. Although the idea of nutraceuticals has grown in popularity recently, it has its roots in the traditional *Ayurvedic* medicine of ancient India. **Aims and Objectives:** This work is a modest attempt to employ *Panchagavya* as a kind of nutraceutical. **Materials and Methods:** Various books and review articles were referred to carry out this review. **Results and Conclusion:** A number of illness, including obesity, dietary and gastrointestinal tract abnormalities, leucoderma, wound healing, leucorrhoea, hepatitis, TB, ulcer, chemical intoxication, as well as other bacterial, fungal and viral infections, are advised for *Panchagavya* therapy. Nutraceuticals are substances that have physiological benefits or provide protection against chronic diseases. Using this concept, *Panchgavya* can be used as a kind of nutraceutical.

Key words: *Panchagavya*, Nutraceuticals, Cow Products

INTRODUCTION

The competitive lifestyle of the twenty-first century has nearly crippled the natural occurrence of an individual's happiness in the form of stress, depression, and other psychological states. The innate immune system in human bodies has also been weakened by

the overuse of antibiotics and steroids in the modern allopathic medical system. The good bacteria (healthy gut flora) in the digestive tract are completely destroyed by prolonged and excessive usage of antibiotics, along with the infection itself. Furthermore, the fancy foods we consume junk, prepared meals, and packaged foods cause poor digestion and intestinal blockages, which in turn result in sickness, diseases, and obesity. In addition to all of this, there is an inspired influence for consuming addictive substances like drugs, alcohol, and others.

Panchagavya, which in *Sanskrit* means a combination of five products derived from cows, is a significant component of *Ayurvedic* treatment. Essentially, it is a mixture of cow dung, cow urine, milk, curd, and ghee. It not only improves one's physical health but also uplifts sad mental moods, bringing about optimism, longevity, and enticing beauty. *Ayurvedacharyas* frequently refer to *Panchagavya* as a heavenly elixir

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because of its many health advantages. The *Panchgavya*, a mixture of the five essences of the cow, is praised in numerous ancient texts, including the *Bhel Samhita*, the *Kashyap Samhita*, the *Charak Samhita*, the *Sushrut Samhita*, the *Gad Nigrah*, the *Ras Tantra Saar*, and the *Yog Ratnakar Granth*.^[1,2,3]

Nutraceutical

Any product generated from food sources having additional health advantages in addition to the essential nutritional content contained in foods is considered as a Nutraceutical. The 'Nutraceutical revolution' and the search for complementary or alternative beneficial goods have been spurred by consumers' demands for quality of life. The long standing consumer acceptability of nutraceuticals is brought about by their association with conventional medicine. Although the idea of nutraceuticals has grown in popularity recently, it has its roots in the traditional *Ayurvedic* medicine of ancient India.^[4,5]

AIMS AND OBJECTIVES

This work is a modest attempt to employ *Panchagavya* in the form of nutraceutical.

MATERIALS AND METHODS

Cow products have a long history of use in *Ayurveda* for therapies, pharmaceutical processes, and good health. Classical texts have sutras that discuss the various characteristics of milk, curds, ghee, urine, bile, feces, horns, and other animal products.

There is a chapter on "*Govaidyak*" in the very well-known and extensively read work "*Arya-Bhishak*" by Vaidya Shankar Daji Pade. The characteristics and applications of cow's milk, curds, butter, buttermilk, ghee, urine, feces, and dung-ash have all been discussed by him. ^[2,6] He hasn't addressed *Panchagavya*, a concoction made of five ingredients: milk, curds, ghee, cow urine, and cow feces.

The classical text *Charak Samhita* in *Apasmar-Chikitsa Adhyaya* mentions *Panchgavya* with specific indications for *Apasmar* (cognitive and memory decline), *Kamala* (Jaundice), and *Jwara* (fever). This suggests the rationale of its use in jaundice as per

Charak Samhita. In a review the work on *Panchagavya Ghrita* for cognitive and mental disorders is shown with encouraging results.^[27,28]

Numerous researches have been conducted on *Panchagavya* and other cow products to determine their activity, efficacy, safety, and acceptability.^[7] Researchers have provided a description of a standardized *Panchagavya* preparation process. Contrarily, many cow products sold for human consumption on the market need better standards and appropriate regulations.

The detailed overview of benefits of each component of *Panchagavya* for contemporary diseases is as follows:

Cow Urine

Ayurveda has praised cow's urine as being medicinal. The ability of cow's urine to treat more than 3000 ailments is now well accepted. For example, cancer, diabetes, blood pressure, asthma, psoriasis, eczema, ringworm, itching, heart attack, artery blockage, fits, piles, prostrate, arthritis, migraine, thyroid, ulcer, acidity, constipation, eosinophilia, cough, phlegm, varicose veins, gynecological issues, and ear and nose issues. The non-toxic liquid waste that the cow excretes is known as "*Gomutra*" or cow urine. Numerous health advantages of cow urine or its distillate have been demonstrated, including raising survival rates and enhancing quality of life in patients with severe conditions.^[3]

Cow urine is utilized in the *Ayurvedic* medical system to create a number of compositions. The *Ayurvedic* texts suggest that cow urine has a wide range of therapeutic properties. The diuretic and nephroprotective effects of cow urine are well established. Additionally, it can aid in weight loss, digestive problems, edema, and the reversal of numerous cardiovascular and kidney illnesses. Additionally, it can treat vitiligo-like skin conditions, piles, jaundice, GIT infections, diarrhea, and more. Numerous advantages of cow urine have been described in Indian literature, but there is no corresponding scientific data. With different claims of improved quality of life and even lengthened survival,

cow urine and its distillate have been used in cancer patients.^[12,13]

Cow urine contains 95% water, 2.5% of urea, and the rest 2.5% include components like enzymes, hormones, salts, and minerals. Besides this, cow urine also contains various enzymes to improve the digestive system and build a robust immune system. Vitamins including A, B, C, D, and E are also present in cow urine.^[10,11]

Cow Dung

Cow dung is antiseptic. It possesses fungicidal and antibacterial properties. As a result, one of the primary components of skin ointments, which are helpful in serious skin problems like psoriasis, eczema, and gangrene, is a filtrate of the suspension created by completely mixing cow dung and water.^[3] Numerous helpful microorganisms, including *Saccharomyces*, *Lactobacillus*, *Bacillus*, *Streptococcus*, *Candida*, and others are abundant in cow manure. Additionally, it includes a variety of dietary ingredients such cellulose, hemicellulose, mucus, lignin, minerals, vitamins, potassium, nitrogen, oxygen, and carbon.^[14] The use of a dried cow dung cake as a fuel source for cooking reduces the need for alternative energy sources, is completely harmless to the environment, and assures air purification by eradicating the airborne germs in rural parts of India. Gobar gas (biogas) plants are another important source of energy. They turn cow dung into methane gas, which is used to fuel electricity production and for cooking.^[7] Additionally, toothpaste made from cow dung enhances dental health and offers defence against oral infections. The usage of cow dung provides more economical and environmentally friendly human activities.^[18]

Additionally, antibacterial and antifungal properties of cow dung have been proven. It works as a skin toner and is successful in treating eczema and psoriasis. Neem leaves that have been crushed and cow dung work well to treat boils and heat rashes. The ability of cow dung to eradicate *Mycobacterium tuberculosis* and the malarial parasite has been proven. It is possible to see the antifungal action against *Coprophilous* fungus. Cow dung burning releases smoke that irritates

eyes and makes them tear up, which helps improve vision.^[15-17]

Cow Milk

Cow milk, according to *Ayurveda*, offers distinct nourishment that cannot be obtained from any other kind of food. Cow milk, when properly digested, supports healthy emotions, nourishes all the tissues, and aids in maintaining the harmony of all the *Doshas*. It is one of the most crucial nutrients for nurturing *Ojas*, the force that sustains life. Ancient literature provided descriptions of the therapeutic properties of cow milk from traditional Indian medical systems. Milk is used for its numerous medicinal benefits, including its ability to protect and improve health.^[3]

Approximately 4.6% lactose, 4.65% fat, 0.54% minerals, 3.4% proteins, and 86% water are found in Indian cow milk, making it nutrient-rich. Beta-casein makes up 27% of cow milk proteins, gamma-casein 9%, alpha-casein 36%, and peptides 27%. About 3% of milk is made up of casein, which is present in milk in a colloidal state together with other pigments like xanthophyll, carotene, and riboflavin.^[21] In addition to being a great provider of calcium and phosphorus, milk also has important fatty acids. Milk also contains phospholipids such cephalin, lecithin, and sphingomyelin, as well as vitamins A, B2, B3, and K.^[20,21]

Consumption of cow milk shows various health benefits. Cow milk is used as a replacement for breast milk for infants. It is essential for the growth of teeth, bones, and heart activities management. The low cholesterol fat of milk is vital for mental and physical development, while milk helps maintain the digestive system, immune system, and brain functions. Lactose serves as an essential source of energy. Milk also enhances vision because of vitamin A whereas vitamin K regulates the blood clotting process.^[22] Milk is a gold mine of health benefits. Milk can be consumed to cure anaemia in babies. Cow milk encourages healthy gut flora while limiting the formation of dangerous gut germs.

Curd (Dahi)

A by-product of cow milk is *Dahi* (curd). *Dahi* is the *Sanskrit* word for curd. The features and benefits of

Ayurveda have been discussed in writing by all of its most eminent practitioners, including *Charaka* and *Sushruta*. It is regarded as one of the healthiest foods in the entire globe. Curd is useful as a medicine for numerous illnesses. It is regarded as a tonic and is said to possess qualities that delay premature aging. Curd is also helpful for people with diarrhoea and dysentery, and it is advised for those with chronic specific and non-specific colitis.^[3]

Curd, also called 'yogurt' or "*Dahi*", is consumed worldwide due to its high nutritional value and health benefits. It is prepared by fermenting cow milk using microorganisms viz *Streptococcus*, *Acidophilus*, and *Lactobacillus*. *Ayurveda* prescribes certain precautions carefully considering the health of individual, environmental and climatic conditions for consumption of curd. Curd contains several nutrients and micronutrients, including water, proteins, vitamins like A, B, D, and E; minerals like calcium, phosphorus, magnesium, zinc, etc.

Probiotics present in curd help in strengthening the immune system and digestive system, whereas various minerals, vitamins, and proteins in curd help fight against multiple pathogens, including HIV. It is used to treat digestive ailments as it can resist the growth of harmful microorganisms and promote good gut flora to improve digestion. Curd also acts as a blood purifier and helps in lowering the total cholesterol, and low-density lipoproteins, thus, preventing the risk of obesity, antifungal effect for treating dandruff from hair and treating piles.^[19,23,24]

Cow Ghee

Cow's Ghee is thought to be the best type of fat for human intake in *Ayurveda*. It is a perfect diet for these cardiac patients who suffer from high blood cholesterol levels because it is packed with nutrients. Regular use improves physical and mental toughness, maintains bodily health, and promotes body potency. It is not only nourishing but also aids in cleansing the body of toxins. It improves eyesight, maintains the health of tendons and muscles, and keeps bones strong but flexible.^[3] Cow ghee prepared by traditional method

possesses high nutritional value, medicinal benefits, and helps to promote good health. Ghee is prepared by heating the butter obtained from cow milk, and heating must be continued at high temperature until the moisture is completely lost.

Ayurveda also supports the co-administration of ghee along with other remedial treatments. Ghee-based formulations, i.e., *Ghrita*, are developed for targeted delivery and enhanced bioavailability of hydrophobic botanicals. For example, *Brahmi Ghrita* for cognitive function; *Vasa Ghrita* for the respiratory system; *Shatadhauta Ghrita* for skin diseases, *Bhallatakadi Ghrita* for wound healing and *Kaamdev Ghrita* for sexual disorders, etc.^[25,26]

Panchagavya is also a traditional method, used to safeguard plants and soil microorganisms and to increase plant production. *Panchagavya* application is found to be more profitable than recommended fertilizer application and chemical spray.

Nutraceuticals

Products known as nutraceuticals can be used as medication in addition to being nutritional. A substance that has physiological benefits or offers protection against chronic disease may be referred to as a nutraceutical product. Nutraceuticals can be used to boost wellbeing, slow down aging, stop chronic diseases from occurring, lengthen life expectancy, or support the body's structure or functions. Due to their potential for having nutritional, safe, and therapeutic impacts, nutraceuticals have recently attracted a lot of attention.

Nutraceuticals can be used to boost wellbeing, slow down aging, stop chronic diseases from occurring, lengthen life expectancy, or support the body's structure or functions. Due to their potential for having nutritional, safe, and therapeutic impacts, nutraceuticals have recently attracted a lot of attention. Numerous studies have demonstrated the impact of nutraceuticals on diseases that are difficult to treat caused by oxidative stress, including obesity, Parkinson's disease, Alzheimer's disease, cardiovascular disease, cancer, and diabetes.^[4]

DISCUSSION

Therapeutic uses of *Panchagavya*

- 1) **Analgesic effect:** Cow urine is recommended by *Ayurveda* for pain management, and the study provides scientific support for its use in today's world.^[29]
- 2) **Anti Hemorrhoid Activity:** The anal mucosa is symptomatically enlarged and displaced distally in haemorrhoids. Cow urine consumption had beneficial benefits on the big intestine. Clinical research validated the use of cow urine as an oral supplement to reduce discomfort, facilitate feces, stop itching, and stop bleeding.^[30,31]
- 3) **Wound Healing Activity:** Cow ghee has shown potential for treating wounds. High levels of saturated and unsaturated fatty acids are thought to have aided in wound healing.^[32] Using an excision wound model from Wistar albino rats of both sexes, cow urine was tested for its ability to speed up the healing of wounds. The reference standard utilized was nitrogen-furazone.^[33]
- 4) **Effect on eyes:** The symptoms of Computer Vision Syndrome (CVS), which include eye dryness, burning, itching, and redness, are widespread issues. Lubricating eye drops are used to treat the condition, but repeated usage can harm the eyes because of preservatives. Cow ghee has a lubricating quality that makes it safe to use in the treatment of CVS. Vitamin A found in cow ghee helps keep the outer layer of the eyeball moist and avoids dryness and blindness.^[34]
- 5) **Anti Microbial Activity:** When tested against pathogens like *Bacillus subtilis*, *Salmonella typhi*, *Klebsiella pneumonia*, and *Pseudomonas aeruginosa*, cow urine and cow urine distillate both show antimicrobial efficacy.^[35] Additionally, the distillate and cow urine showed free radical scavenging abilities. Comparatively speaking, fresh cow urine performed better than distillate. The antibacterial activity of fresh cow urine was comparable to that of Ofloxacin, which was regarded as the gold standard.^[36]

- 6) **Anti Epileptic Effect:** *Panchagavya Ghrita* was examined for anti-epileptic activity using a rat model of maximal electroshock (MES) induced convulsions. It demonstrated anticonvulsant activity by increasing the motor activity of rats. The formulation also successfully inhibited the phenobarbitone-induced sleep time. The *Panchagavya Ghrita* is recommended as adjuvant therapy in treating epilepsy.^[37,38]
- 7) **Anti Cancer Effect:** According to studies, consuming cow ghee reduces the risk of developing cancer. Cow urine has also shown promise as an anti-cancer substance.^[39,40]

Panchagavya and Nutraceuticals

Cow urine, Cow dung, milk, curd, and ghee are all components of *Panchagavya*. Cow dung has a very strong aroma and flavour that is not pleasant. Hence, one is hesitant to consume these two things straight away. The taste and smell of cow dung and urine make *Panchagavya* unpalatable when combined with milk, curd, and ghee. As we have seen, *Panchagavya* possesses a wide range of medicinal qualities and can be used to treat a wide range of illnesses, but due to its strong aroma and flavour, it is not easy to consume. The drawbacks of *Panchagavya* can be lessened by consuming it in the form of nutraceuticals. *Panchagavya* can be easily taken in the form of nutraceuticals by both children and adults. The association of nutraceuticals with traditional medicine is bound to bring long lasting consumer acceptance.

As discussed above Cow dung, cow urine, cow milk, ghee and curd of *Panchagavya* has shown various activities like antipyretic, anti hemorrhoidal, wound healing, antimicrobial, anti cancer, anti epileptic etc. So individually also they can be used in the form of Nutraceuticals as cow urine and cow dung cannot be consumed directly. Also, some people have lactose intolerance or are not willing to consume curd and ghee because of their unlikeliness towards cow and ghee. So, in such conditions Nutraceuticals can be very much beneficial. Also, the quantity of consumption of *Panchagavya* can also be reduced if we consume Nutraceuticals.

CONCLUSION

Panchagavya is a promising treatment for a number of human diseases and has proven its capacity to benefit humanity. *Panchagavya's* effects must not be restricted to just ancient literature, even if scientific efforts are required to validate biological activities, safety, and standards. It is inevitable that consumers will adopt nutraceuticals on a long-term basis once they are associated with conventional treatment. The acceptance will be unquestionable when it is supported by recent advances in medical science. For this purpose, processing techniques and standardization methods should be employed so that *Panchagavya* in the form of Nutraceuticals can be used on a large scale. We will also need a better understanding of the ingredients of cow products, their pharmacokinetics, pharmacodynamics and therapeutic ratio.

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