

# XRF Analyses of Panchagavya as Multidimensional Drugs in Ayurvedic Science

Sitaram Swain, Tapasi Upadhyaya

**Abstract:** Ayurved is one of the traditional medicinal systems evolved and flourished in India. It has its existence since the ancient vedic period. It involves all the natural products without any side effects. Hence it is considered the safest medicinal system for any kind of ailments including fever to cancer. As India is well known for its spirituality, residents of India are still using Ayurvedic medicines faithfully. There are certain Ayurvedic remedies those include animal derived products. Cow is very important in the life of the Indians from both economic and spiritual point of view. Panchagavya are obtained from cow including milk, curd, ghee, urine and dung. These are very important ingredients in preparing Ayurvedic remedies. In the current study we have analysed by X-ray florescence spectrophotometer for the elementary composition of panchagavya and it is also tried to correlate them with different ailments for which they have sure impacts.

**Keywords:** Ayurved, Panchagavya, X-ray florescence.

## I. INTRODUCTION

Since prehistoric times five products derived from the cow such as; milk, urine, dung, curd and ghee are being used by the Hindu religion as holy products. In Ayurveda these products are described as “Panchagavya”. It has also been reported that these are quite helpful in treating life threatening ailments, singly or combined with several organic or inorganic products. Panchgavya is economically decisive to cattle based rural economy as it surely an important factor to upgrade the financial condition of farmers and landless people [1,2].

Because of the nourishing nature like mother, in India, cow is considered as mother and called “Gaumata”, the provider of riches as its milk to humanity. Each solo component of Panchgavya has distinctive properties and uses in quite a lot of aspects. It has been written in historical scripts that, Maharshi Vasishtha was worshiping the godly cow “Kamdhenu” and Panchagavya was presented by Maharshi Dhanvantari presented, a god gifted medicine to mankind[3,4].

Panchgavya therapy is otherwise called “Cowpathy”. It has three significant properties such as immune-stimulatory, immune-modulatory and anti-inflammatory activity [5]. A study on Albino rats has revealed that Panchagavya has its impact on central nervous system and muscle pain [6].

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This therapy is fetching attention worldwide as it is considered safe at present due to the harmful side-effects of allopathic medicines [7].

## II. MATERIALS AND METHODS

In the current study we have tried to analyse the elementary composition of different components of Panchagavya and to relate their unique compositions with the ailments they are used to treat. The study was undertaken from the month of September, 2018 to June, 2019 in the laboratory of Zoology department in Centurion University of Technology and Management. Enlisted panchagavya were analysed through XRF spectroscopy in the laboratory of Centurion University of Technology and Management, Odisha, India. XRF analyses almost all chemical elements of periodic table present in the sample from atomic number 11(Sodium) to 92(Uranium) and detected the trace elements present in the drugs [8].

## III. PROCEDURE OF SAMPLE COLLECTION

For XRF analysis, samples were kept on a measuring cup, which was supported film and measured the reading in XRF spectrophotometer. This spectrometer has designed to measure samples in a cup with circular disks having radius between 5 to 50 mm. In early morning, the first urine and dung of cow was collected by using plastic vials. Fresh milk sample was collected from the same cow in plastic vial and after collection those were stored in the ice boxes and then transferred to laboratory for XRF analysis. For XRF analysis 10 ml of each sample were transferred into measuring cups, with supported films and the readings were obtained from the XRF spectrophotometer. For XRF analysis, cow-dung was dried and crushed by using mortar and pestle. Through XRF analysis, the major, minor and trace elements present in the samples were detected. After analysing, the readings were recorded in the system.

## IV. RESULTS AND DISCUSSIONS

This preliminary ethno-zoological study was undertaken in the tribal region of Mayaurbhanj District. This study was including local tribal people and Ayurvedic physician. According to them, they have been continuing the uses of traditional medicines from their ancient generations. There are some ethno-zoological practices which have been continuing from their ancestors to till now [9]. Different concentration of elements has been detected in panchagavya. The analysis of multi-element composition of these products have presented in table-1.



**Milk**

Cow milk contains Calcium, proteins, micro-nutrients, vitamins and carotenes etc. It is digested at ease and has bio-protective role. It has anti-ageing property [10]. Milk of cow can also be used as a fungicide [11,12]. It has antimicrobial properties as it contains IgA, lactoferrin, lysozyme, lactoperoxidase etc. [13,14]. Carotene of milk contains Vitamin A that enhances visual strength. Cow milk reduces acidity. It has good sugar for diabetic patients. Cow milk is best for infants with all essential nutrients. It also contains vitamin K to prevent anaemia in haemorrhagic disease of newborn. Fat content of cow milk prevents chances of colon, breast and skin cancer. Spread of cancer cells is suppressed by conjugated linoleic acid (CLA) [15]. Cow milk is utilized both in medicinal and spiritual purposes [16].

**Urine**

Cow urine as a components of panchagavya, is a universal remedy for several ailments. Cow urine increases immunity and is hence considered as water of life or "Amrita". Urine has antimicrobial property. Intense use of allopathy is now being replaced by cow urine: a natural product [17]. It enhances immune responses. Cow urine contains about 24 types of salts which are used in medicines to cure several diseases [18]. It can cure human ailments like constipation, piles, acidity, ulcer, diabetes, arteries blockage, blood pressure, cardiovascular disorders, asthma, eczema, cancer, AIDS, tuberculosis, bacterial infection, several gynecological problems, parkinson's disease, arthritis etc. Antibiotics resistance in microbes can be inhibited by administering Gomutra along with antibiotics. It also helps in repairing of damaged DNA. Gomutra shows vital antifungal characteristics as it comprises quinolones and flavoquinolones. Cow urine is an anti ageing factor, prevent illness, hairloss and also used for skin and nail problem of the feet. Cow urine concoction (CUC) is useful for hypoglycaemia, liver disorder, anaemia, bacterial and fungal infections etc. [19,20].

The cow urine also has utilised in agricultural field. Cow urine is comprised of about 95% water, urea, minerals and

salts; hormones (2.5%) and enzymes (2.5%); cytokine and lactose etc. Beside these it includes phosphorous, calcium, nitrogen, ammonia, manganese, potassium, urea, uric acids, carbonic acid; potash, and amino acids etc.. Copper is widely used as an antidote to destroy diseases. Amino acids and cytokines have significant potential in boosting immunity hence cow urine can balance several physiological disorders. Ark prepared by distilling urine and collecting vapour is used to prepare ayurvedic remedies [21]. Ark has significant effect on cancer. This therapy is cost-effective and devoid of any side effects.

**Dung**

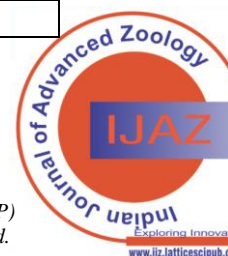
Cow dung has antibacterial and antiseptic properties. It also has antifungal activity [22,23]. It is most effective for skin when mixed and crushed with neem leaves. It is also effective in toothaches and in destroying causative agents of infection. Fresh cow dung is pure but once it has been laid on the ground awhile, it starts to change its characteristics [24].

**Ghee**

Ghee is very useful for skin. Immuno-stimulant property of cow ghee has been specified by rise in neutrophil adhesion, delayed type hypersensitivity (DTH) and haemagglutination (HA) responses in mice [26]. It is combined with specific herbals to cure skin diseases and healing of wounds when mixed with honey [27]. Panchagavya ayurvedic formulation containing *E. officinalis*, *G. glabra*, and ghee is sensitive in nature. Ghee also shows hepatoprotective activity in rat liver against tetra chloride poisoning [28]. Caraka described Amrta Cow ghee as "ambrosia for curing all types of poisons". Cow ghee has some unique characteristics that is vital for human health such as it stimulates cellular regeneration and immune system, stimulates the brain, reduces hair loss, used in chronic cough, eye disorders, in epilepsy, several neurological disorders, to check nose bleed, improves health of teeth and gums, etc. [29].

**Table 4 XRF analysis of Panchagavya**

Elements	Constituents of Panchagavya				
	Milk	urine	curd	ghee	Dung
<b>P</b>	0.160%	543.3ppm	0.145%	256.1ppm	
<b>S</b>	648.0ppm	254.5ppm	329.8ppm	90.8ppm	
<b>Cl</b>	0.248%	0.709%	0.167%	5.1ppm	2.166%
<b>K</b>	0.183%	1.310%	0.218%		
<b>Ca</b>	0.196%		0.180%	89.0ppm	
<b>Mn</b>	2.3ppm	0.0ppm		0.0ppm	
<b>Fe</b>	22.6ppm	17.3ppm	22.6ppm	19.3ppm	
<b>Co</b>	0.0ppm	0.0ppm	8.7ppm	0.0ppm	
<b>Zn</b>	4.0ppm		4.6ppm		
<b>Br</b>	7.4ppm	8.9ppm	4.3ppm		40.5ppm
<b>Rb</b>	4.5ppm	17.8ppm	6.2ppm		
<b>Sn</b>	24.2ppm		46.0ppm	35.3ppm	



Eu	24.7ppm	20.3ppm		0.0ppm	
Er	62.2ppm	68.4ppm		84.9ppm	
Gd				13.4ppm	
CH <sub>2</sub>				99.941%	
Re	0.7ppm		0.8ppm		
H <sub>2</sub> O	99.133%	97.887%	99.247%		
Dy		14.3ppm			
CuO					970.8ppm
ZnO					0.111%
Al <sub>2</sub> O <sub>3</sub>					3.897%
Nio					7.0ppm
As <sub>2</sub> O <sub>3</sub>					3.4ppm
Rb <sub>2</sub> O <sub>2</sub>					183.1ppm
Sro					147.2ppm
Y <sub>2</sub> O <sub>3</sub>					8.8ppm
ZrO <sub>2</sub>					371.7ppm
Eu <sub>2</sub> O <sub>3</sub>					0.168%
Yb <sub>2</sub> O <sub>3</sub>					5.0ppm
OSO <sub>4</sub>					0.0ppm
PbO					23.5ppm
CO <sub>2</sub>					0.0ppm
SiO <sub>2</sub>					57.551%
P <sub>2</sub> O <sub>5</sub>					8.858%
SO <sub>3</sub>					3.531%
V <sub>2</sub> O <sub>5</sub>					255.9ppm
K <sub>2</sub> O					5.822%
CaO					10.225%
TiO <sub>2</sub>					0.634%
Cr <sub>2</sub> O <sub>3</sub>					195.9ppm
Fe <sub>2</sub> O <sub>3</sub>					5.827%
MnO					1.029%

### Curd

Curd acts as blood purifier and is very essential for haematological problems. It is also called “Tridoshnashak”, “Vatanashak”, “Pittanashak”, and most effective in gastrointestinal disorders like piles. Cow curd is an efficient probiotic often considered as digestive, nutritive and useful in gastrointestinal disorders by observing the growth of harmful entities. There are lots of lactic acid producing bacteria present in curd that produces antifungal metabolites viz. cyclic dipeptides, phenyllactic acid as well as proteinaceous compounds and 3-hydroxylated fatty acid [25].

### Panchagavya products

Medicines prepared from Panchgavya enhance immune resistance and to fight against various diseases. Many general remedies are derived from panchgavya like massage oil, hair oil, shampoo, soap, tooth paste and various cosmetics etc. Currently, these are providing safety use of cosmetic products over the toxic chemical products being used. Many of these also increase immune competence. It is considered that the substitute therapeutic approaches like cowpathy should overcome the adverse effect of antibiotics, drug resistance improvement and existence of antibiotic residues in food chain [30].

### Efficiency of panchagavya therapy

Cowpathy is an alternative therapeutic approach for safeguarding human health. Panchgavya has some significant impacts on immune system as it enhances cellular and humoral immune responses and acts as anti-aging factor by repairing the damage DNA. Cowpathy can maintain the human health in the scenario where the immunity is reducing drastically because of environmental pollutants present in the food chain. Its antifungal properties can be useful for the soil fertility [31,32].

### V. CONCLUSION

Now people are using panchagavya or cowpathy to get safe and better outcome over allopathy. It is the best therapy for curing different diseases as its non-toxic and can be easily obtained from indigenous domestic cow. This therapy needs more attention for researchers, physicians as well as the public in current practices. From the XRF analysis it is concluded that the components contained in these products are very useful in treating life threatening disorders.



These products are being used by the ayurvedic specialists since thousands of years. Modern man after using lots of artificial chemical products now is getting attracted towards these precious natural products. Scientific validation is required for the pharmaceutical study. This therapy is widely accepted not only in traditional people but also in advance scientific society. Therefore, it is necessary to integrate advance science with ancient vedic science to promote the applications of cowpathy for challenging the investigations.

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