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TITLE: PANCHAGAVYA AND PANCHAGAVYA GHRITA: A CONCEPTUAL STUDY

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ABSTRACT:

In present work literature related to five cow products and Panchagavya ghrita [PGG] formulations have been compiled from various sources of literature. Ayurvedic classics quoted preparation method of PGG by using five cow products [Cow ghee, Cow milk, Cow urine, Cow dung juice and Cow curd]. It is indicated in treatment of mental illness. Ayurvedic and modern science literature revealed the properties of each cow products in very elaborative manner. Preparation of PGG is well narrated by taking equal quantity of five cow products. Standard method of preparation of PGG and preparation of cow dung juice is nicely elucidated in recently published government books AFI. Testing parameters for analysis of PGG has made clear in Ayurvedic Pharmacopeia of India. Earlier research works interpreted standardization of PGG and reported its antiepileptic, antidepressant and nootropic activities in experimental and clinical studies. This update on PGG gives clear picture that it has good potential to treat CNS disorders as a single drug or it can be used as adjuvant with modern antiepileptic, antidepressant and nootropic drugs.

Key Words: *Panchagavya Ghrita* (PGG), *Panchagavya* (five Cow products).

Introduction:

Change in life style, peer pressures, stress and ageing are the trigger factors facilitate to develop mental and behavioural disorders viz Depression, Psychosis, Dementia and Alzheimer diseases. Conventional therapy provides ample number of medicines useful in management of these disorders, but having some limitations as reported for specific adverse drug reactions¹. Traditional ayurvedic system provides group of herbal drugs, amongst them medicated ghee is the foremost form of medicine prescribed in routine clinical practice. This dosage form is having its own importance as the selective extraction of active principles in lipid base is carried out. These lipophilic medicines might cross blood brain barrier showing desired effects on CNS². Therefore helps to regularize functions of brain and in management of manifestations of mental disorders.

In this connection, during literary search it is observed that Panchagavya Ghrita, a medicated ghee formulation is advocated for treatment of Apasmar and Unmad (disorders closely related with mental disorders)^{3, 4, 5}. Thus the literature of five cow products and different formulae of PGG was compiled from important manuscripts from Vedic literature and Ayurved viz Charak Samhita, Ashtang Hridaya, Bhaishjya Ratnavali up to Ayurvedic Formulary of India. Besides this, various national and international journals are searched to

get scientific data of manufacture and pharmaco-therapeutics of PGG formulation. Complied data is then interpreted to get detail updates of PGG formulation.

Cow is described as Kamdhenu (one which fulfils all the wishes) since Vedic times in Indian civilization Indian society has addressed the cow as go mata. The Churning of the Sea episode brings to light the story of the creation of the cow. Five divine Kamadhenus (wish cows), viz, Nanda, Subhadra, Surabhi, Sushila, Bahula emerged in the churning⁶. Cow's urine or go-mutra has been known to be used by various sectors of people in India from the Vedic periods for medicinal purpose. Panchagavya was consumed after bath by Samavedic Brahmins⁷. Ayurvedic texts depicted profound use of animal products viz milk, ghee, Curd, Butter milk and meat soup as food supplements and used in preparation of numerous ayurvedic medicines. (See Table 1 and 2)

3. COMBINATIONS OF FIVE COW PRODUCTS:

3.1 Panchamrita is one of the dietary product prepared with cow milk, curd, ghee, honey and sugar used to increase appetite and as well as is used for divine to god²⁸.

3.2 Panchagavya literally means a mixture of five products. These are Cow milk, cow urine, cow dung, curd and ghee. Panchagavya is also used for detoxification of minerals and metals. Especially cow urine is used for detoxification of metals²⁸.

4. FORMULATIONS OF PANCHAGAVYA:

Acharya Charak and Vagbhatacharya in their texts have quoted preparation method of PGG by using five cow products²⁹. Charak and Vagbhat have guided to take five cow products in equal quantity in preparation of PGG. Later in recent literature PGG preparation method is properly explained and pre step of preparation of cow dung juice is well narrated in AFI. In standard ayurvedic government published book API testing parameters of PGG has given.

To prepare PGG from five cow products initial step is to prepare cow dung juice. Thus as per AFI guideline it should be prepared and filtered to get clear product. It is also said that cow urine should be filtered. Cow milk, cow dung juice, cow urine, cow curd and cow ghee is taken in equal quantity and mixed thoroughly to form a homogeneous mixture. This mixture is then heated and boiled on low flame till the formulation achieves ayurvedic testing criteria.

Table 1: Properties and pharmacological actions of five cow products

	Cow Milk^{8,9}	Cow Urine¹⁰	Cow Ghee^{11,12}	Cow Curd¹³	Cow Dung Juice¹⁴
Rasa	Madhur	Katu, Tikta, Kashaya	Madhur	Madhur, Amla, Kashaya	Tikta, Kashaya
Virya	Shita	Ushna	Shita	Ushna	Ushna
Vipak	Madhur	Katu	Madhur	Madhur, Amla	Katu
Guna (Properties)	Guru, Snigdha, Shita, Sara	Tikshna, Ushna, Laghu	Guru, Snigdha, Shita	Guru, Snigdha, Ushna, Ruksha	Laghu

Doshagnata	Vata, Pitta ↓	Kapha and Vata↓, Pitta↑	Vata, Pitta and Kapha ↓	Vata↓, Kapha and Pitta ↑	Pitta ↑, Vata ↓
Rogagnata (Indications)	ManasRoga (PsychoNeurological disorders), Udar Roga (GITdisorders), Fever, Hunger, Thrist, Blood disorders	Skin Diseases, Kushtha (leprosy), Kamla (Jaundice)	Unmad (Schizophrenia), Apasmar (Epilepsy), Jirna, Jwar(Fever), Murcha (Gidiness)	Jwar (Fever), Raktaj vyadhis (blood disorders), Mutrakruhata (Urinary Incontinence)	Kasa (Cough), Cold, Skin diseases, Eye diseases

Literary information was scientifically assessed for each five cow products. It was revealed that these products comprise with antioxidant, antibacterial, anti carcinogenic and wound healing activities. It has potential to reduce production of free radical.

Table 2 elaborates detail about researches and different proven activities of cow products.

Table 2: Research works on five cow products:

SR NO.	COW PRODUCTS	RESEARCH STUDY	INTERPRETATION
1.	Cow Milk	In vitro study	cow milk hydrolysate showed antioxidant and anticancer activities ¹⁵
		Analytical study	peptic hydrolysate of cow milk casein showed highest antioxidant activity ¹⁶
2.	Cow Urine	In vitro study	antibacterial activity was tested by disc diffusion method ¹⁷
		Analytical study	Urine's containing fatty acids and other antioxidants might be responsible for the observed ameliorative effect ¹⁸
		Clinical study	Administration of fresh urine orally has added effect on wound healing due to immunological properties ¹⁹
		Analytical study	it can be used to treat these disorders or as preventive measure to reduce production of free radicals. ²⁰
3.	Cow Ghee	Analytical study	Cow ghee and Hydrogenated cow ghee could be safely and routinely used for nutritional and medicinal formulations ²¹
		Experimental study	cow ghee protects against mammary carcinogenesis ²²
		Clinical study	cow ghee is effective in wound healing ²³

		Clinical study	if ghee is consumed in level of 10% of the diet it does not increase lipid peroxidation processes ²⁴
4.	Cow Curd	Clinical study	The Lacto acidophilus present in curd can inhibit the growth of the pathogenic villain in dental caries, Streptococcus mutans ²⁵
		Clinical study	poultry egg or meat allergy can be reduced after the use of probiotics particularly in the form of cow curd ²⁶
5.	Cow Dung	Analytical study	cow dung extracts possess antibacterial activity ²⁷

Final product PGG should be tested and compared with API analytical parameters. If formulation analytical values are comparable to standard values then we can interpret that the preparation method is properly followed and quality base formulation is formulated.

In later period, literature from ayurvedic compendia stated variant of PGG formulations. From that literature it is revealed that *Panchagavya* is used as single or combination with herbal drugs to formulate different formulations such as *Swalpa-panchagavya ghrita*^{30, 31} *Panchagavya ghrita*^{29, 32, 33} and *Mahapanchagavya ghrita*^{34, 35}.

We can understand from this data that addition and mixing of herbal drugs to five cow products in turn develop into complex drug. This additional process conducted in preparation of PGG might be changing the therapeutic profile of combined forms of PGG than PGG prepared with five cow products. (See table 3 and 4)

Table 3: PGG formulations stated in ayurvedic literature

Reference	Formulation name	Ingredients with ratio	Indication
Charak chi. 10/17	Panchagavya Ghrita	Cow ghee, milk, curd, urine, dung juice are taken in equal qty.	Apasmar, kamla, jwar
Charak chi. 10/18-24	Maha Panchagavya Ghrita	<u>Kwatha dravya-</u> 24 herbal drugs are taken in 2 pala qty. <u>Kalka dravya -</u> 18 herbal drugs are taken in 1 karsha qty and Five cow products are taken in 1 prastha qty. Each	Apasmar, unmad, shotha, udar roga, gulma, arsha, pandu, kamla, halimak, grahabadha and chaturthak jwar
Ashtang hri. Uttar 7/18	Panchagavya Ghrita	Cow ghee, milk, curd, urine, dung juice are taken in equal qty.	Apasmar, jwar, unmad and kamla
Ashtang hri. Uttar 7/19-23	Maha Panchagavya Ghrita	<u>Kwatha dravya-</u> 24 herbal drugs are taken in 2 pala qty. <u>Kalka dravya -</u> 18 herbal drugs are taken in 1 karsha qty and Five cow products are taken in 1 prastha qty. Each	Jwar, apasmar, udar roga, bhagandar, shophya, arsha, kamla, pandu, gulma, kasa and graha badha
Yog ratnakar	Swalpa Panchagavya Ghrita	Cow ghee, milk, curd, urine, dung juice are taken in equal qty.	Chaturthik jwar, unmad, graha dosha and apasmar

Bhaishjya ratnavali 25/36	Panchagavya Ghrita (swalpa)	Cow ghee, milk, curd, urine, dung juice are taken in equal qty.	Chaturthik jwar, unmad, graha baadha and apasmar
AFI, Part-I, 6:25	Panchagavya Ghrita	Goghrita was taken in 768 gm and rest each four ingredients are taken in 3.07 kg. Qty	Apasmar, jwar, unmad and kamla

Earlier research works focus on Standardization of PGG and therapeutic activities of PGG formulations

Table 4: Research studies on PGG

SR NO.	RESEARCH STUDY	INTERPRETATION
1.	Analytical study	HPTLC study indicates the presence of phenolic and flavonoid type compounds. This study established quality control of PGG and controlling batch to batch variation ³⁶
2.	Experimental study	PGG administered for 30 days in 1 ml/ kg dose showed anticonvulsant activity ³⁷
3.	Experimental study	PGG was given in 150 to 300 mg /kg per oral route, showed significant reduction in CCl4 induced hepatotoxicity ³⁸
4.	Standardization	Preparation method of PGG from these cow products was established along with standard quality parameters ³⁹
5.	Experimental study	7 days therapeutic scheduled dose of PGG showed antiepileptic activity in ICES test in mice as compared to Phenytoin standard drug and therapeutic dose of PGG as per ayurvedic guideline [40 gm/ 70 kg] administered for 21 days, showed significant retention of memory than Phenytoin ³⁹
6.	Experimental study	21 days treatment of PGG at therapeutic dose determined antidepressant activity as compared to Imipramine drug in Tail suspension and Forced swim animal models ⁴⁰
7.	Experimental study	21 days treatment of PGG at therapeutic dose determined Nootropic activity as compared to Piracetam drug in Diazepam induced amnesia and Morris water maze animal models ⁴¹
8.	Clinical study	PGG was administered in 10 gm dose in early morning for 90 days continuously. It is resulted that PGG has significant effect on Grahana shakti and Smaran shakti hani (impairment of cognition), but the difference in between PGG and Cow ghee groups is statistically insignificant ⁴²

5. DISCUSSION AND CONCLUSION:

5.1 Extensive use of five cow products right from Vedic period is seen. Five cow products are mixed with each other and were used for divine of god and sometimes it was consumed by the people to purify body. In later period it is observed that Panchagavya was used for

medicinal purpose. In ayurvedic literature different formulae are found of PGG formulations. In two formulae, it is seen that five cow products are mixed with each other and heated to formulate PGG. On the other hand in another formula five cow products are mixed with medicinal herbal drugs and polyherbal formulation is formulated. No any change in ratio and preparation method was noticed in formulation of PGG prepared from only five cow products in ayurvedic classics. However in recent books change in ratio of cow products is mentioned in preparation of PGG. Therapeutic profile of PGG formulations have been given in each formula. Considering this data in routine clinical practice this formulation is practiced to treat mental illness viz Apasmar and Unmad [Epilepsy and Psychosis]. Recent literatures, Ayurvedic formulary of India and Ayurvedic pharmacopeia of India stated standard operating procedure and analytical parameters of PGG. These guidelines are very useful for pharmacists to prepare this formulation as quality drug and one can analyze final product using API parameters.

5.2 Research works conducted on Panchagavya showed that cow milk has been reported for anti cancer and anti oxidant activities. Cow urine has been reported to possess anti bacterial, anti fungal, anti helminthic, anti cancer and anti oxidant activities. Cow ghee act as anti carcinogenic agent and it prevents cardiovascular and free radical induced diseases. Cow curd was reported as anti diarrheal and probiotic agent and it having anti bacterial activity and Cow dung shows antibacterial and fungicidal activities.

5.3 Panchagavya ghrita has great therapeutic profile; have been assessed in experimental and clinical studies. These researches have created evidences regarding the positive effects of formulation on CNS. Experimental studies showed antiepileptic, antidepressant, anti-amnesic and nootropic activities as well clinical evidence has drawn a conclusion that it has beneficial effect on cognition [memory]. Research works conducted on PGG strengthen its use in clinical practice. The therapeutic profile of formulation is seen as a cumulative effect of synergism of five products, because each cow product has potential to treat certain mental illness. Thus target action of PGG is facilitated and helps to control mental and cognitive disorders.

5.4 This update on PGG gives clear picture that it has good potential. It would be the better option to treat specific mental abnormal conditions as a single drug or as adjuvant with modern Antiepileptic, Nootropic, Antipsychotic or Antidepressant drugs.

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गोशकृद्दरसदध्यम्लक्षीरमूत्रैः समैर्घृतम् ।
सिद्धं पिबेदपस्मारकामलाज्वरनाशनम् ॥ इति पञ्चगव्यं घृतम् ॥ (च.चि.१०/१७)
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