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Short Review

Panchgavya and cow products: A trail for the holy grailAshwinikumar A. Raut ^{a,*}, Ashok D.B. Vaidya ^b^a Clinical Research and Integrative Medicine, MRC-KHS, K. Desai Road, Vile Parle (W), Mumbai 400056, Maharashtra, India^b Medical Research Centre, Kasturba Health Society, Vile Parle (W), Mumbai 400056, Maharashtra, India

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ABSTRACT

For millennia, cow has been central to Indian economy, life and culture. There are innumerable references-Vedic and subsequent to the sacred significance of cow. The benefits of cow have been described at length in relation to agriculture, environment, health, economy and spiritual progress. However, the socio-political issues surrounding cow as a sacred animal have raised acrimonious debates. In Ayurveda also, there is a long tradition of using cow products for positive health, pharmaceutical processes and in therapeutics. There have been quite a few studies on the activity, efficacy, safety and acceptability of *Panchagavya* and other cow products. Paradoxically, many cow products available in the market for human consumption require improved standardization and proper regulation.

Integration of cowpathy (*Govaidyak*) in traditional Indian systems of medicine has been natural, based on their common *dravyagunavigyan*. But if its integration with conventional medicine is contemplated, we will need better understanding of the ingredients of cow products, their pharmacokinetics, pharmacodynamics and therapeutic ratio. A rational beginning can be made by data collection of experiential and anecdotal responses. A meticulous analysis of database of *panchgavya* and other cow products should look for temporal relationships, biological plausibility and translational potential before embarking on state-of-the-art experimental and clinical studies for selected indications.

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If one searches 'Google' for 'cow products for health', there appear 3, 03, 00,000 results in just 0.96 s! But the same search words when used for PubMed which looks long for cow + products + for + health and comes up with a measly figure of 2080. This is reflective of the title of the present communication. This gulf in citation obviously justifies the need to look critically for the nature of experiential, exploratory and experimental data on the claims made for the therapeutic potential of cow products available in public domain and on the internet. Recently, a national programme for scientific validation – SVAROP (Scientific Validation and Research on *Panchagavya*) has been announced by the Ministry of Science and Technology, Government of India.

For millennia, the cow has been central to Indian economy, life and culture. There are innumerable references-Vedic and subsequent, to the sacred significance of cow. The benefits of cow have been described at length in relation to agriculture, environment, health, economy and spiritual progress. The socio-political

issues surrounding cow as a sacred animal have raised acrimonious debates. But such harangues should not prevent us from an open-minded enquiry into the medicinal value of cow products. To those who have any aesthetic repugnance to such a domain of study need to be reminded of the current major developments in the human gut microbiome and successful faecal transplants against the infections with *Clostridium difficile* [1].

In Ayurveda, there is a long tradition of using cow products for positive health, pharmaceutical processes and in therapeutics. There are *Sutras* in classical texts on the varied properties of milk, curds, ghee, urine, bile, faeces, horns etc. from different animals. In a very popular and widely followed book 'Arya-Bhishak' by Vaidya Shankar Daji Pade, there is a chapter on '*Govaidyak*'. He has described the properties and uses of cow's milk, curds, butter, buttermilk, ghee, urine, faeces and dung-ash [2]. However, he has not dealt with *Panchagavya* which is a combination product of five ingredients viz. milk, curds, ghee, urine and faeces of cow. The tradition of *Panchgavya* usage is much more in South India and particularly in Tamil Nadu and Kerala [3]. But recently in South Gujarat, at Valsad, *Panchagavya* is manufactured and reported to be useful, as nasal drops, in chronic sinusitis, allergic rhinitis and

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migraine. 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). Achliya et al. reported, the protective effects of *Panchagavya* in CCl₄-induced hepatotoxicity [4]. This suggests the rationale of its use in jaundice as per *Charak Samhita*. M. Jithesh, from Kottakal reported in a review the work on *Panchgavya ghrta* for cognitive and mental disorders with encouraging results [3].

There have been quite a few studies on the activity, efficacy, safety and acceptability of *Panchagavya* and other cow products [5]. Many such products of *Panchagavya* are investigated having applications in veterinary sciences and agronomy [6]. Pathak has described the bio-enhancing effects of *Panchagavya* and other cow products in horticulture [7]. They have described a fermentation product that is said to be stable for 6 months. De et al. have shown antioxidant activity of *Panchgavya* in DPPH and FRAP assays [8]. They have described a standardized method of *Panchgavya* preparation. Paradoxically, many cow products available in market for human consumption require improved standardization and proper regulation. *Panchagavya* with other plant combinations has also been investigated; for example, *Panchagavya* with *Aloe vera* extracts has shown to have anti-nociceptive activity using tail immersion model [9].

Cow urine and distillate of cow urine have been used in cancer patients with varying claims of improvement in the quality of life and even prolonged survival [10]. Earlier CSIR scientists were granted US patents for cow urine distillate due to its bio-enhancer, antibiotic, anti-fungal and anti-cancer activities. This generated much interest. But these claims need critical clinical studies. Cow urine and cow dung are largely used in the manufacturing process and methods of traditional/classical Ayurvedic formulations. *Sanjeevani vati*, *Punarnava-mandur* are two such common preparations. The phytochemical profiles of processed and unprocessed plants need to be studied like aconite. Traditionally, '*Bhasmas*' are still manufactured by heating of cow dung cakes by fire; the method provides gradual and, graded heating by *Agniputa*, *Kukkuta puta*, *Gaja puta* etc.

Recently the type of cow milk has been considered for its impact on health. A decade ago, Keith Woodford wrote a book 'Devil in the Milk'. The book has raised a controversy as to the A₁/A₂ milk types of β-caseins [11]. β-casomorphin-7 (BCM-7), a peptide from the A1 type, has adverse impact on health. The seven member peptide BCM-7 arises as a digestive by-product of the beta casein in A1 milk from *Bos Taurus* cows, particularly H-F cows, due to the substitution of a proline residue by a histidine residue in the protein polypeptide chain. BCM-7 leaks into the bloodstream of people with leaky gut syndrome causing severe, fatal pathologies like atherosclerosis and schizophrenia. In nursing infants, it causes type 1 diabetes and autism. BCM-7 binds strongly to the opioid receptors and prevents them from their normal function of responding to endorphin activation. Endorphins cannot then fulfil their very important natural functions, and autism in infants, or schizophrenia in adults follows. BCM-7 through activation of opioid receptors also triggers immune dysfunction leading to type 1 diabetes mellitus.

'Rashtriya Gokul Mission' was announced in 2014, by the Government of India, to enhance the indigenous breed of cows (A₂ type). In Ayurveda, cow's milk has many nutritional and therapeutic benefits. Successful management of cirrhotic ascites with milk only diet has been shown in Ayurveda [12]. *Semicarpus anacardium* (*Bhallatak*)-based formulation has better tolerability and compliance when given with milk, as demonstrated in patients of osteoarthritis. Unlike without milk, the same formulation was non-toxic when given alongwith milk, in a long-term chronic animal toxicity study [13]. It is a traditional

practice in Ayurveda to prescribe cow's milk along with certain medicines to enhance the efficacy/toxicity ratio. Casein is present in nano-form in the milk. Some phytoactives, like curcumin, would bind to casein and enhance absorption and systemic delivery [14].

Ghee is a product unique to India. For decades, its high content of saturated fatty acids was often blamed for the prevalent dyslipidemia and enhanced risk for cardiovascular diseases and a high incidence of coronary heart disease among Indians [15]. Such a 'tag' led to a widespread ghee-avoidance in India. There has been a paradigm shift now, as evidence has emerged on the benefits of ghee and a healthy lifestyle. The problem is not necessarily due to only saturated fatty acids [16]. In experimental animals, 'conjugated linoleic acid' in ghee increased antioxidant activity and prevented atherogenesis [17]. Cow ghee, prepared traditionally, is regarded beneficial in therapy and for health promotion. Kalpana Joshi has demonstrated that *ghrita* prepared by traditional Ayurvedic method contains a higher amount of DHA which has beneficial effects on human health [18]. In Ayurvedic therapeutics, ghee is co-administered with other remedies. Special ghee-based formulations are developed for target indications e.g. *Bacopa monnieri* (*Bramhi-ghrita* for cognitive effects) *Adhatoda vasica* (*Vasa-ghrita* for respiratory diseases), hundred times washed with water (*Shata-dhauta-ghrita* for skin ailments) etc. Putatively, such *ghrita* formulations would enhance bioavailability, delivery and target occupancy of hydrophobic phytoactives. There is a need to better understand the pharmaceuticals of such formulations and their relevance to liposomal preparations.

Over a century ago, Metchnikoff, a pioneer of cellular immune defence, popularized yogurt as a healthy and longevity food [19]. Curds, yogurts and butter are globally consumed for their high nutritional value. In Ayurvedic dietetics, there are precautions for their intake. An individual's constitution, climate and health status have to be considered. There are items which require to be modified by co-administration with other food substances. Curds are recommended with green gram soup (*mung*) for an individual of *vata Prakruti*, with a lump sugar for one with *pitta Prakruti* and with cumin powder for a *kapha Prakruti* individual. Such personalized yogurts may offer significant health and medicinal benefits. Ayurceuticals of novel types are worth exploring with the basis of nutritional sciences and processes of nutraceutical technology. Whey, the liquid residue of curdled milk, has whey protein, which has a high nutrient value. Bovine whey protein was studied as a replacement of foetal bovine serum in the medium for cells with encouraging results [20]. Such an alternative would prevent the violent methods used to collect foetal bovine serum.

Integration of cowpathy (*Govaidyak*) in traditional Indian systems of medicine has been natural based on their common *dravyagunavigyan*. But if its integration with conventional medicine is contemplated we will need better understanding of the ingredients of cow products, their pharmacokinetics, pharmacodynamics and therapeutic ratio. These would be the prerequisites. Besides that purity has to be demonstrated as to pesticides, heavy metals and microbes. A rational beginning can be made by data collection of experiential and anecdotal responses. A meticulous analysis of such a database of *panchagavya* and other cow products would look for temporal relationships, biological plausibility and translational potential before embarking on state-of-the-art experimental and clinical studies for selected indications e.g. cancer, obesity, arthritis, allergy, etc. Cowpathy is a vast-rich reservoir of traditional cultural- healthcare practices. Application of relevant-science and modern-technology would help translate these traditional experiences into evidence-based therapies with novelty and innovations.

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None.

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