

# Shatdhauta Ghrita: A Promising agent in the development of herbal creams

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DOI: 10.47750/pnr.2022.13.S01.159

## Abstract

Ayurvedic is quite popular, being practiced throughout the country including tribal and remote areas where other modes of therapies are not readily available. Though it lacks the elaborate organizational structure of its modern counterpart, it has a significant impact on meeting the health-care needs of a large portion of India. Clarified butter fat (cow ghee) is washed one hundred times in water to create a traditional Ayurvedic preparation known as Shatdhauta ghrita (100 times washed ghee). This process transforms ghee into a soft, cooling, nourishing, silky unguent that is used as a traditional moisturizer, antioxidant, and anti-wrinkle skin cream. Shatdhauta ghrita (SDG) is a handcrafted emollient that is excellent for damaged skin. In this review author mainly focused on preparation method of Shatadhauta ghrita, its mechanism, marketed scenario, benefit and need of SDG formulation. According to the review, Shat dhauta ghrita has potential as a topical product for treating skin diseases, but it must be evaluated using modern scientific parameters. SDG is act as an excellent cream base, if we incorporate herbal drug or phytoconstituent in the SDG it act as a promising agent in the development of herbal cream.

**Keyword:** SDG, Shatadhauta Ghrita, Ayurveda, Cow ghee, Samskara.

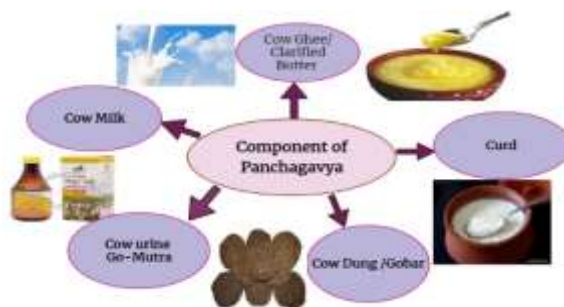
## 1. INTRODUCTION

The addition of organic fertilizers in recent years has received great attention because of its many benefits in improving soil properties and increasing production. Organic fertilizer is more effective and environmentally friendly in addition to being an effective way to get rid of waste as it is characterized by containing more concentration of nutrients and less content of C/N

Until the advent of the allopathic system of medicine, the traditional system of medicine had been completely responsible for the world's healthcare. This approach quickly gained acceptance since it made use of current knowledge in biology and chemistry for both research and therapy, and it today holds a key position in the healthcare industry. Despite this, conventional medical systems still contribute significantly to healthcare.

Allopathic medicine's usage of single molecules can have negative side effects. Panchagavya, or five cow-derived products (cow milk, curd, ghee, urine, and dung) mentioned in Ayurveda, play play a crucial part in the treatment of diseases. Panchagavya Product shown fig no; 1. [1, 2]

**Figure 1.** Component of Panchagavya



India is a country rich in traditions that connect social rituals and the scientific justifications behind them. A cow is known as a 'Gaumata' or a 'Kamadhenu' in India because of its nurturing nature, similar to that of a mother. [3]. Kamadhenu is the name of a sacred cow who is thought to bring about desired results. Panchagavya is a health and medicinal treasure trove. The importance of using cow milk, ghee, urine, dung, and curd, all of which are referred to as 'gavya,' has been described in the Ayurvedic medical system (i.e. obtained from 'Gau' means cow) for the treatment of a variety of diseases. Each product has unique components and applications in human health, agriculture, and other fields. 'Panchgavya' is a combination of two words: 'Panch' (five) and 'gavya' (water). [4], which represents five items derived from a cow (Fig. 1). Each 'gavya' has a unique medicinal effect against a wide range of diseases. Panchgavya treatment or therapy is called 'Cowpathy', comparable to other pathies (Allopathy, homeopathy, and naturopathy). Each 'gavya' can be used on its own or in combination with other products or treatments. Furthermore, all five products can be used alone or in conjunction with other products of synthetic, herbal, or mineral origin. [53, 55]

Panchagavya therapy is recommended for a variety of diseases, including asthma, flu, allergies, cardiovascular diseases, renal disorders, rheumatoid arthritis, wound healing, leucorrhoea, hepatitis, dietary and gastrointestinal tract disorders, obesity, tuberculosis, ulcer, chemical intoxication, and other bacterial, fungal and viral infections [3, 4]. The therapy has also demonstrated its therapeutic potential against severe pathological conditions like cancer, AIDS, and diabetes [2, 4, 5].

Shata-dhauta-ghrita (SDG) washed cow ghee 100 times with water (shata = one hundred, dhauta = washed). Traditional texts mention it for treating burns, chicken pox, scars, wounds, herpes, leprosy, and other skin diseases, as well as as a vehicle for drugs to be applied externally. [8] The Ayurvedic preparation was evaluated for its physicochemical parameters in the study, and changes that occurred during washing were investigated. An attempt is made to find out the rationale behind washing cow ghee 100 times with water. The characteristic odour and granular, oily consistency of cow ghee are not present in shata dhauta ghrita, and so it is a homogeneous, smooth, non-oily product that is easier to apply so Patient compliance is thus improved. When compared to the acidic pH value of ghee, the neutral pH of shata dhauta ghrita makes it beneficial by preventing skin irritation. Because of the smaller particle size of shata dhauta ghrita, the product is non-granular, non-sticky, and homogeneous, making it easy to apply to the skin and possibly increasing the rate of absorption through the skin. Washing results in a homogeneous oil-in-water emulsion with better consistency and viscosity, which makes it suitable for use in topical applications.

Until the advent of the allopathic system of medicine, traditional systems of medicine had been responsible for safeguarding the world's healthcare. Prior to the development of the allopathic medical system, the traditional systems of medicine, which had been developed over many years, had been in charge of ensuring the global healthcare system. [9] Several modern cream bases are available for preparation of topical formulations. Their constituents like beeswax, stearic acid, liquid paraffin are characterized by their inertness, as they do not have any therapeutic activity. However, an Ayurvedic base like Cow ghee is reported to possess various activities/properties. Caraka clearly states the uses for ghee: it improves memory, intelligence, agni (factor responsible for digestion, metabolism, and biotransformation), semen, ojas (bio-essence of life), Kapha (one of the three bio-energies mainly responsible for cohesiveness) and medas (adipose tissue). It alleviates Vata (one of the three bio-energies mainly responsible for movement), Pitta (one of the three bio-energies mainly responsible for heat), poison, insanity, phthisis, inauspiciousness or fever. It is the best of all fats, is cold, madhura rasa, madhura vipaka, has 1000 potentialities and so, if used properly according to prescribed methods, exerts 1000 types of actions. [10] If it is used as a base for preparation of cream formulations, the formulation shows synergistic effect with the active ingredients. Bramhi ghrita a polyherbal Ayurvedic formulation is recommended in the management of psychological disorders like Unmad (insanity), Apasmara (epilepsy) and Graharog (idiopathic psychological disorders). [11] Hingusauvarchaladi Ghrita and Saptarvartita Hingusauvarchaladi Ghrita showed anticonvulsant activity. [12] Manjishthadi Ghrita can be prescribed as a local healing agent for common wound. [12] Wound healing activity is also shown by Darvhi Ghrita. [13] Anti-inflammatory activity by Jatyadi ghrita, etc. [14] Sedative and anticonvulsant activities of Unmadnashak Ghrita. [15] Shata-dhauta-ghrita (SDG) is a 100 times washed (Shata = one hundred, dhauta = washed) ghee, i.e. clarified butterfat. It is mentioned in traditional texts for the management of conditions like burns, chicken pox, leprosy, wounds [53,55], and other skin diseases and as a vehicle for drugs to be applied externally. [16] Finally, the physicochemical properties of cow ghee and SDG have been compared with those of a modern vanishing cream base used in similar formulations. Hence, an attempt is being made through this paper to find out the rationale behind washing cow ghee 100 times with water. [17]

In India, clarified butter is called as Ghrita. Ghrita is the primary type of cooking oil used in all regional cuisines of India. It is also used medicinally and is a component of several Hindu religious rituals. As a result, Ghrita has enjoyed a long history of being well valued for a variety of reasons. Thus, Ghrita has been so highly regarded for so long for so many things. When we say Ghrita, we mostly mean Goghrita (cow ghee).

## 2.1. GHRITA MYTHOLOGY

In Hindu mythology, Prajapathi, the Lord of Creatures, created Ghrita by rubbing or "churning" his hands together and then pouring it into fire to spawn his offspring. Whenever the Vedic ritual of pouring Ghrita into fire was performed, it was a re-enactment of creation. Butter in mythologies is a symbol of semen, churning represents the sexual act, and the formation of child in its mother's womb. [18]

### 2.1.1. Vedic period

During the Vedic era People in the Vedic age were aware of Chatush Sneha. The description of Ghrita, Taila etc. are available in Vedic literature. According to Vedic analogy Ghrita is hidden in milk, like the divine lord in invention. Ghrita is referred to as the first and most fundamental of all edibles in the Vedas, and it is an essential component of Vedic civilization. The Vedas' central idea is Yajna (sacrifice), and in every Yagna, Ghrita is the mandatory gift to Agni (fire). Agni is the gods' mouth, and it is through Agni that offerings are made to the gods. Ghrita is the food that they eat. Hutabhu is the name given to the God Agni, the first word deity of the Rig Veda. (The devourer of Ghrita). Ghrita was referred to in the Yajurveda using terms like Havi and Ajya. [19]

### 2.1.2 Brahmana period

In Shatapad Brahmana for denoting Ghrita, three words were used viz, Ajya, Ghrita, and Ayuth, as well as their specific applications, were also mentioned. Ghrita was denoted in Ethareya Brahmana by the words Navaneeta, Ajya, Ghrita, and Ayuth, and its specific uses were also mentioned. [20]

### 2.1.3. Samhita Period

This is regarded as the pinnacle of Ghrita's versatility. Ghrita flourished in Brihatrayee due to its widespread application for a wide range of purposes ranging from external applications to internal administration via various routes. [21]

### 2.1.4. Susrutha Samhita

Ghrita Varga is a separate Varga in Susrutha Samhita. According to this Samhita, some types of Ghrita are Purana Sarpi, Maha Ghrita, and Kumbha Ghrita In this treatise, the qualities of ghrita are also highlighted in detail. Acharya addressed Sneha Mahatwa, Sneha Bheda, Snehopayoga, Pakavidhi, and other topics in Susrutha Chikitsa Sthana. Susrutha describes Ghrita, which is made of Ksheera, as Ksheerotha Ghrita. Susrutha Samhita also thoroughly explains the properties of Ksheerotha Ghrita. [22]

### 2.1.5. Charaka Samhita

This treatise contains a detailed description of Sneha Yoni, including sources of oils and fats, Sneha types, Ghrita and Taila properties, and so on. Charaka has described various aspects of Ghrita in different contexts. Ghrita as per Charaka Samhita, one among the Dravyas in Nithyaseva niyadravya and he considered Ksheeraghrithabhyasa for daily basis as best Rasayana. Ghrita is considered as best among Chathush Sneha due to its Samskarasya Anuvartana Guna Ghrita Guna, Karma etc. he explained in the context of Snehana Karma. Later he added much information about Ghrita in the context of Ksheera Varga. Logic of systematic usage of Ghrita for better therapeutic effect is available in Jwara Chikitsa of Charaka Samhita.[23] Wide usage of Ghrita is mentioned in Unmada Chikitsa and Kushta Chikitsa Adhyaya. In this context, Acharya Charaka discusses Purana Ghrita and Prapurana Ghrita, as well as their organoleptic and therapeutic properties. [24]

## 2.2. PHARMACEUTICAL IMPORTANCE OF GHRITA

- Ghrita is an unavoidable component of many pharmaceutical procedures. It is used in pharmaceuticals in a variety of ways.
- In Sneha Kalpana, Ghrita serves as Sneha Dravya. It aids in the extraction of drugs' lipid-soluble active ingredients. It improves drug absorption and changes the therapeutic properties of ghrita into those of dravya.
- Ghrita is used in many Avaleha preparations, which helps in proper mixing of Leha and better absorption.
- Ghrita is used for the Shodhana of drugs like Gandhaka, Hingu etc.
- For the preservation of Guggulu Kalpana, Ghrita is used.
- It is used in Bhajana Samskara i.e. Ghrita will be completely applied over the inner surface of the vessel used for Sandhana process during Asavarishta preparations.
- It is a component in Kruta Yusha and Krutha Mamsarasa.

In the Ayurvedic system of medicine, ghee plays a vital role, both as a vehicle to deliver the active constituent and a base for incorporating active components to formulate the dosage forms. Ayurveda also supports the co-administration of ghee along with other remedial treatments. For example, Brahmi ghrita for cognitive function; Vasa ghrita for the respiratory system; Shatadhauta ghrita for skin diseases, Bhallatakadi ghrita for wound healing [47,48] and Kaamdev ghrita for sexual disorders, etc. [35,38]. Saleem et al. have performed molecular characterization studies on Cow ghrita [57]. The study revealed that Cow ghrita is a rich source of essential fatty acids (omega 3 and omega 9), vitamins like A, D, E, and K [39]. Memory enhancement, lowering bad cholesterol, preventing skin and cardiovascular diseases, promoting skin health, maintaining digestion, generating energy, purifying the blood, protecting the liver, and other health benefits of cow ghee [35]. Ghee has been shown to have anti-inflammatory, antineoplastic, vision-improving, and wound-healing properties. [40, 41]. It has beneficial effects such as immunostimulant, anti-cholinergic activity, antiasthmatic effect, and aids in the treatment of paralysis, among others. [12, 17]. Cow ghee's Health benefits, and medicinal Use are depicted in the below. Fig. 2. and fig.3

**Figure 2.** Cow ghee health benefits and medicinal effects

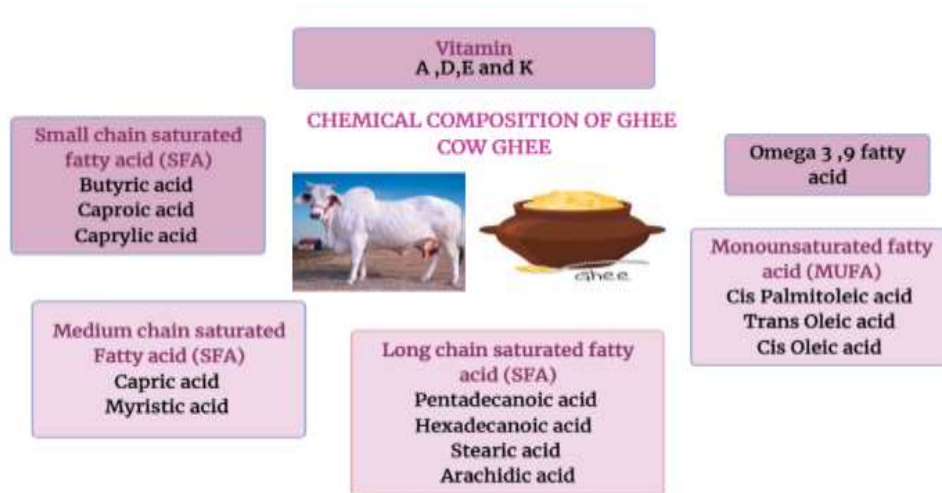


## 2.3. GHRITA PHARMACOLOGICAL ACTION:

It contains approximately 8% lower saturated fatty acids, making it easily digestible. These are the most edible fats and are not found in any other edible oil or fat. It contains vitamins, including Vit A and Vit. E is anti-oxidants and is helpful in reducing

ketone bodies, helpful in preventing oxidative injury to the body. Vit. A keeps epithelial tissue of the body intact keeps the outer lining of the eyeball moist and prevents blindness. Essential fatty acids promote proper growth of the human body. The melting point of Ghrita is 35°C which is less than the normal temperatures of the human body. Its digestibility coefficient or rate of absorption is 96% which is highest of all oils and fats. Active ingredients are easily digested and absorbed because they are combined with Ghrita. Because cell membranes contain lipid, Ghrita's lipophilic action facilitates transportation to a target organ and final delivery within cells. Ghrita's Lipophilic action facilitates the formulation's entry into the cell and delivery to the mitochondria microsome and nuclear membrane. Ghrita contains beta-carotene and vitamin E, both of which are anti-oxidants. [25, 26, 27].

**Figure 3:** Chemical composition of cow ghee.



## 2.4. REVIEW OF LITERATURE:

Acharya Susruta in *uttaratantra* mentioned *Shatadhouta ghrita* in *jwara* for *daha shamana*. The procedure told as to wash ghee for hundred times in cold water. The resultant ghee is known as *Shatadhouta ghrita* and it is of light in consistency. [28]

If there is bleeding during fourth month of pregnancy then below the naval region, the entire body of the pregnant woman should be smeared with *Shatadhouta ghrita* or *sahsra dhouta ghrita*.

In *kusta chikitsa* Acharya Charaka says that if there is *daha* in *kusta*, then for *dahashamanartha* (for pacification of burning sensation) *abhyanga* (massage with ghee) is advised with *tiktaghrita* or *Shatadhouta ghrita*. [29]

This is an effective remedy for *visarpa* (herpis), when applied repeatedly by mixing equal quantity of fine powder of *Pancha Valkala*, It subsides *daha* (burning sensation), *shoola* (pain) in *vrana* (wound) and cures *visarpa* like that of *garuda* killing the *sarpa* [30]

*Shatadhouta ghrita* used as *pralepa* in the technique of scraping of eye lids and other disorder of the eye lids. [31]

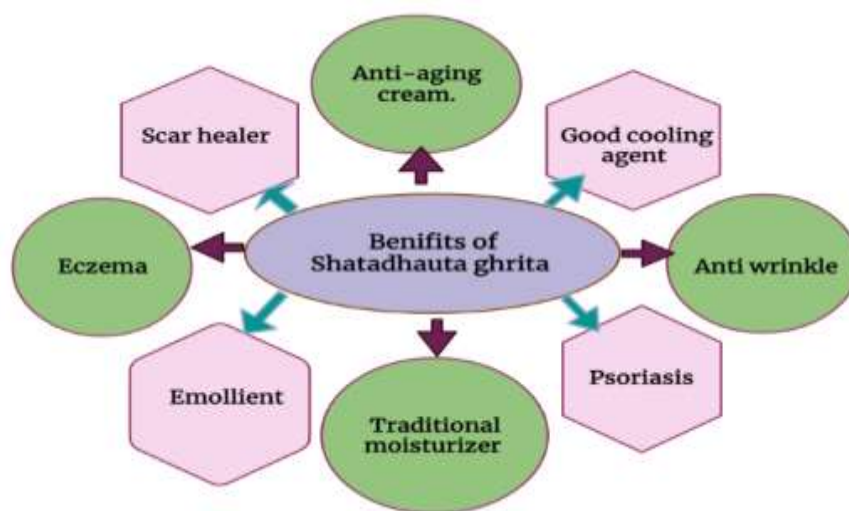
In Sushruta *kalpa sthana shatadhouta ghrita* is indicated in *visha chikitsa*. A poultice prepared from the anti-venomous drugs of cooling potency mixed with *Shatadhouta ghrita* and applied over the *kothayukta vrana* (gangrenous wound). [32]

Traditionally, pregnant women with unexplained bleeding or spotting should apply this *shatadhouta ghrita* around the umbilicus. [33]

## 2.5. SHATDHAUTA GHRITA

Shatdhauta ghrita Samskara is a pharmaceuticals procedure that induces therapeutic properties, increasing the potency and bioavailability of the drugs involved. Samskaro hi naama Gunantaradhanam Uchyate.[34] The methods by which the properties like Rasa, Guna, Virya, Vipaka, undergo “Gunantaradhaanam” i.e the changing of Sthoola Guna (macro form) to Sukshma Guna (micro form)[35], both chemical and physical properties within the Dravya are changing (Substance). An Ayurvedic remedy called Shatadhouta Ghrita is frequently used to treat skin conditions. It is made by washing ghee 100 times in water, as the name suggests. This process turns ghee into a soft, cooling, nourishing, silky ointment that can be used as a traditional moisturiser and anti-wrinkle skin cream. [36] Shatadhauta Ghrita is made by washing the Ghrita with water until the water turns warm, then discarding the warm water and adding fresh water, and repeating the process a hundred times. Vaidyak Shabda Sindukara has added another reference to the preparation of Shatadhouta Ghrita by Santapya (heating) the Ghrita and Nirvapana (pouring) in Sita Jala (cold water) 100 times. [37] Uses of Shatadhauta ghrita are depicted in fig.4

**Figure 4:** Uses of Shatadhauta ghrita shown



Clarified butter fat, also known as cow ghee, is used to make the traditional Ayurvedic preparation known as shat dhaut ghrita (100 times washed ghee). Ghee is transformed into a soft, cooling, nourishing, silky unguent that can be used as a traditional moisturiser and anti-wrinkle skin cream using this method. Shat dhauta ghrita is a handcrafted emollient that is excellent for damaged skin because ghee penetrates and nourishes all seven layers of tissue. In many different skin conditions, including burns, wound scars, skin marks, burning sensation, herpes, etc., a special but very straightforward ghee preparation is used. [38] Changes of ghee after washing it in water it shown in fig .5.

**Figure 5.** Shatadhauta ghrita preparation method



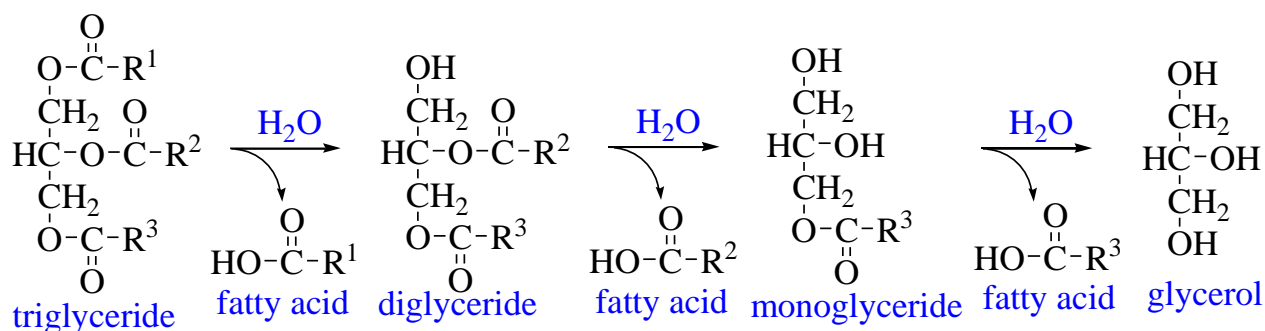
## 2.6. MECHANISM OF SHATADHAUTA GHRITA PREPARATION

Goghrita (Clarified Butter) was taken in shallow vessel, water added in vessel containing ghrita & kneading action was performed. After performing kneading action for 2-3 mins the mixture was allowed to settle down & then above water was drained. This procedure was repeated for 100 times. Shatadhauta Ghrita was obtained after repeating the procedure 100 times. In this method, ghrita was triturated with water, resulting in the formation of a water in oil type of emulsion because water is in the dispersed phase and oil is in the continuous phase. As the washing process continues, the particle size of fat granules decreases due to the pressure applied during agitation (as per texture it was non granular and smooth). Eventually, successive washings result in o/w type of emulsion. It is possible that it might lead to formation of a complex system like w/o/w emulsion. The reason may be passage of water globules in fat molecules by forming water oil (w/o) emulsion and leads to swelling of Ghrita. The pigment may leak out into the water from repeated washings, changing the colour of the item (Dhauta). In this process the triglyceride is converted into a glycerol in presence of water. [40] Mechanism of preparation of SDG shown fig no.6. In preparation of Shatadhauta ghrita ghee converted in to a soft cream in this process fat splitting process was take place due to presence of water so triglycerides is converted into glycerol. It shown in fig .7. A comparison of Go ghee and Shatadhauta ghrita was demonstrated in table no. 1.

**Figure 6.** Preparation method of Shatadhauta ghrita



**Figure 7:** Fat Splitting process



## 2.7. COMPARISON OF GO GHEE AND SHATADHAUTA GHRITA SHOWN IN TABLE NO: 1. [39]

**Table 1.** Comparison of physical and chemical parameters of Go ghee and SDG

Parameter	Go ghee	SDG	Change
<b>Organoleptic properties</b>			
<b>Colour</b>	Golden yellow	White	
<b>Odour</b>	Characteristic, Pleasant	Odorless	
<b>Taste</b>	Characteristic	Tasteless	
<b>Texture</b>	Granular, oily	Smooth, non - oily	
		Homogeneous mass	
<b>Physical parameters</b>			
<b>Moisture. Content (%)</b>	0.27	0.8	↑ 2.98 times
<b>Ph</b>	4.6	5.9	↑ 1.28 times
<b>Particle size (μ)</b>	179.02	59.99	↓ 2.98 times
<b>Viscosity (cp) at 20 rpm for 30 sec</b>	8000	9770	↑ 1.22 times
<b>Copper content (ppm)</b>	0.13	1.2	↑ 8.86 times
<b>Chemical parameters</b>			
<b>Acid value</b>	0.84	0.11	↓ 7.59 times
<b>Saponification value</b>	234.26	25.96	↓ 9.02 times
<b>Iodine value</b>	35.59	2.82	↓ 12.62 times
<b>Unsaponifiable matter</b>	0.78	0.04	↓ 18.72 times
<b>RM value</b>	21.67	0.22	↓ 98.50 times
<b>P value</b>	1.1	0.1	↓ 11 times

### 3. CURRENT MARKET SCENARIO

According to literature survey author was study current marketed scenario as follow its mention in table no: 2

**Table 2.** Current market scenario of SDG

Sr. No	Name of product	Company	Contain	Use
1.	SKM Shatadhauta grutham Dayurvedic moisturizing cream pack	SKM	Ghee quantity sufficient	Moisturizer
2.	Shata dhauta ghrita	Indu Pharma	Shata dhauta ghrita base	Night Usage Cream For Spot Removal, Skin Brightening effect
3.	Svarasya Shata Dhauta Ghrita - Natural Desi Ghee Skin Moisturizer (100 Times Washed Ghee) - 50 gm	Svarasya	Shata dhauta ghrita base	Moisturizer
4.	Shat Dhaut Ghrita 20 GM	Gaurashtra	Shatdhauta ghrita quantity sufficient	Useful in psoriasis, eczema, piles, cracked heels & palms burning sensation foot sole and different skin diseases. Do not apply on lips. For external use only.
5.	Earthiness Shatadhauta Ghruta (50 gm)	Earthiness	Shatadhauta base Quantity sufficient	Natural moisturizer for all type of skin
6.	Gavyamart Shata Dhauta Ghrita - Natural Desi Ghee Skin Moisturizer (100 Times Washed Ghee)	Gavyamart	Shatadhauta base Quantity sufficient	Deeply Moisturizer
7.	Inducare Shat Dhaut Ghrit (Pack of 25 gm)	Inducare pharma	Shatadhauta ghrita base --- 1000mg	Moisturizer, For glowing skin
8.	Shat Dhaut Ghrita cream	New united Pharma	Shatadhauta ghrita base 65 gm	Rebuild the dermal tissue Moisturizer, healing skin at deepest level.
9.	Shatshautaghritam cream	Kottakal Ayurveda	Shatadhauta ghrita 20 gm	Astringent, anti-wrinkle and cleansing cream
10	A2 Shatadhauta ghrita cream	Panchyagavya product	Shatadhauta ghrita 100 gm	Anti-aging cream.

## 4. FUTURE PROSPECT

Ayurveda as a prehistoric science of life has a long history and its basic principles may still be compelling today. The call for scientific valuation of Ayurveda has been recognized for a long time. However, the quintessence of any science is a continuous search for new knowledge through research, development and newer applications. It is preferable to conduct ongoing research on the safety, quality, and efficacy of Ayurvedic drugs and procedures. Methodical credentials and critical analysis of clinical practice are essential. Shatdhauta ghrita (washing ghee 100 times) is a popular medication in Ayurveda, but its applicability in modern therapy is not explored much. So with the objective of exploring, the utility of Shatdhauta ghrita in topical drug delivery as a base, this study was carried out. In future, it could be used as an alternative option to modern topical ointments and if we combine herbal drugs or phytoconstituent on the Shatdhauta ghrita, it may show an effective herbal formulation. Although scientific efforts are required to validate biological activities and safety and establish standards, the effects of Shatdhauta ghrita should not be limited to ancient literature [59, 60].

## CONCLUSION

From the present review, it can be concluded that changes taking place in cow ghee while washing it with hundred times to prepare Shatadhauta ghrita, makes it an elegant and suitable product for topical application. Shata dhauta ghrita is used as natural permeation enhancer in topical product. It is prepared by cow ghee washing with 100 times with water. It is smooth, homogenous, non-oily product, easier to apply and thus improve patient compliance. Chemical analysis and Samskara siddhanta of Ayurveda prove Shatadhauta ghrita is effective and act as good cooling agent, emollient, moisturizer and good scar healer. Shatdhauta ghrita is a popular Ayurvedic medication, but its use in modern medicine has received little attention. The purpose of this study was to look into the utility of Shatdhauta ghrita as a base for topical drug delivery. If we mix herbal medication or phytoconstituent on the Shatdhauta ghrita, it may demonstrate successful herbal formulation in the future as a replacement for modern topical ointments.

## ACKNOWLEDGMENTS:

The authors want to thanks management and Principal Dr.Sanjay Kshirsagar MET institute of pharmacy, BKC for the necessary facility and support. This is affiliated with Savitribai Phule Pune University Nashik. The author would like to thank her research mentor Dr. Moreshwar P. Patil for his insightful advice Guidance. The author wishes to thank EDA and SBG for their technical assistance. and also wishes to express gratitude to the NFST/RGNF/UGC, Government of India for providing financial assistance in the form of a fellowship (Award no -2021-NFST-MAH-04091)

## ABBREVIATIONS:

SDG: Shata dhauta ghrita

RPM: Revolutions per Minute

PPM: parts per million

RM: Reichert Meissl Value

CP: Centipoise

P Value of ghee: Polenske value

NFST: National fellowship of schedule tribal

**ETHICAL APPROVAL AND CONSENT OF PARTICIPANT:** Not Applicable

**CONSENT FOR PUBLICATION:** Not applicable

**COMPETING INTEREST:** The author declares that they do not have any competing interests.

**FUNDING:** None

## REFERENCES

1. Shah CP, Patel DM, Dhama PD, Kakadia J, Bhavsar D, Vachhani UD, et al. In vitro screening of antibacterial activity of cow urine against pathogenic human bacterial strains. *Int J Curr Pharmaceut Res* 2011; 3:91-2.
2. Dhama K, Rathore R, Chauhan RS, Tomar S. Panchgavya (cowpathy): an overview. *Int J Cow Sci* 2005; 1:1-15.
3. Khan MY, Roy M, Saroj BK, Dubey S, Sharma VK. Review-Benefits of Panchgavya therapy (Cowpathy) for health of humans. *Asian J Res Pharm Sci* 2015; 5:115. <https://doi.org/10.5958/2231-5659.2015.00019.3>.
4. Chauhan RS. Cowpathy: a new version of ancient science. *Indian Cow Sci Econ J* 2008; 5:39-40.
5. Schnürer J, Magnusson J. Antifungal lactic acid bacteria as biopreservatives. *Trends Food Sci Technol* 2005;16:70-8. <https://doi.org/10.1016/j.tifs.2004.02.014>.
6. Chauhan RS. Panchgavya therapy (Cowpathy): current status and future directions. *Indian Cow Sci Econ J* 2004;1:3-7.
7. BAJAJ, Komal K., et al. Panchgavya: A precious gift to humankind. *Journal of Ayurveda and Integrative Medicine*, 2022, 100:5-25.
8. Chauhan RS. Panchgavya therapy (Cowpathy): current status and future directions. *Indian Cow Sci Econ J* 2004; 1: 3-7.
9. Kumar R, Opportunities and limitations in globalizing Ayurveda, Ayurveda at the crosswords of care and cure, IndoEuropean seminar on Ayurveda held at Arrabida. (2011).260
10. Dash B and Gupta K, The Caraka samhita: anvaya (natural work Order), transliteration, annotation along with English equivalents, translation & Commentary in English based on Cakrapani's Ayurveda Dipika, 1st ed., Indian Medical Science series, Sri Satguru Publications: Delhi (1999).
11. Jyoti S, Gubbannavar, Harimohan C, Harisha CR, Renuka K, Vinay JS, Analytical profile of Bramhi Ghrita: A Polyherbal Ayurvedic Formulation. *AYU*,2012. 33(2): 289-293.
12. Roshya JC and Ilanchezhian R, Experimental evaluation of Hingusauvarchaladi Ghrita and Saptarvaritita Hingusauvarchaladi ghrita with special reference to their anticonvulsant activity. *AYU*, 2010, 31(4): 500-3.
13. Baria J, Gupta SK, Bhuyan C, Clinical study of Manjishthadi Ghrita in Vrana ropana. *AYU* 2011.32(1):95-99.
14. Charde MS, Fulzele SV, Satturwar PM, Dorle AK, Study of the topical wound healing activity of Darvhi ghrita. *Indian Drugs*.2003. 40 (2):115-118
15. Fulzele SV, Satturwar PM, Joshi SB, Dorle AK, Studies on anti inflammatory activity of a polyherbal formulation Jatyadi Ghrita. *Indian Drugs*,2002, 39: 42-44 .
16. Achliya GS, Wadodkar SG, Dorle AK. Evaluation of sedative and anticonvulsant activities of Unmadnashak Ghrita. *J of Ethnopharmacol*, 2004.94(1):pp. 77-83.
17. Mishra AS, Bhaishajyakalpanavidnyan, (Chokhamba Surbharati Prakashan),2001.221- 235,301-302.
18. Acharya Susruta, Susruta Samhita, commentary by Sri Dalhanacharya and Sri Gayadasacharya, Vaidya Yadavaji Trikamji Acharya, Choukhambha Orientalia, Varanasi, 9th edition, 2007:204.
19. Acharya Susruta, Susruta Samhita, commentary by Sri Dalhanacharya and Sri Gayadasacharya, Vaidya Yadavaji Trikamji Acharya, Choukhambha Orientalia, Varanasi, 9th edition :2007:407.
20. Acharya Susruta, Susruta Samhita, commentary by Sri Dalhanacharya and Sri Gayadasacharya, Vaidya Yadavaji Trikamji Acharya, Choukhambha Orientalia, Varanasi, 9th edition : 2007:409.
21. Acharya Susruta, Susruta Samhita, commentary by Sri Dalhanacharya and Sri Gayadasacharya, Vaidya Yadavaji Trikamji Acharya, Choukhambha Orientalia, Varanasi, 9th edition : 2007:205.
22. Acharya Agnivesa, Charaka Samhita, commentary by Sri Chakrapanidatta, Vaidya Yadavaji Trikamji Acharya, Choukhambha Prakashan, Varanasi. Edition. 2007:38.
23. Acharya Agnivesa, Charaka Samhita, commentary by Sri Chakrapanidatta, Vaidya Yadavaji Trikamji Acharya, Choukhambha Prakashan, Varanasi. Edition. 2007:132.
24. Acharya Agnivesa, Charaka Samhita, commentary by Sri Chakrapanidatta, Vaidya Yadavaji Trikamji Acharya, Choukhambha Prakashan, Varanasi. Edition. 2007:82.
25. Acharya Agnivesa, Charaka Samhita, commentary by Sri Chakrapanidatta, Vaidya Yadavaji Trikamji Acharya, Choukhambha Prakashan, Varanasi, Edition 2007:418.
26. Acharya Agnivesa, Charaka Samhita, commentary by Sri Chakrapanidatta, Vaidya Yadavaji Trikamji Acharya, Choukhambha Prakashan, Varanasi, Edition 2007:pp.472.
27. Susruta samhita of susruta part 2 by GD Singhal chowkamba Sanskrit publication second edition 2007.
28. Charakasamhita text with english translation on chakrapani dattas ayurveda dipika vol2 by Rk Sharma Bhagavandash 2009.
29. Yogaratnakara PT Sadashiva Shashtri joshi published by Jayakrisna das haridas gupta chowkamba Sanskrit series banaras 1939.
30. Susruta samhita of susruta by part3 GD Singhal chowkamba Sanskrit publication second edition2007.

31. Susruta samhita of susruta by part3 GD Singhal chowkamba Sanskrit publication second edition2007.
32. Astanga hridaya vidyotini bhasha tika kaviraj atridev gupta 4th edition chowkamba Sanskrit series banaras 1939 .1-4
33. Pandey Kashinath, Chaturvedi Gorakhnath. Charaka Samhita of Agnivesha Vidyotini Hindi commentary, Varanasi: Chaukhambha Vidya Bhawan; Part I. Reprint 2009.680.
34. Pandey Kashinath, Chaturvedi Gorakhnath. Charaka Samhita of Agnivesha Vidyotini Hindi commentary, Varanasi: Chaukhambha Vidya Bhawan; Part I. Reprint 2009.566.
35. Acharya S.N. Mishra, Abhinava Bhaishajyakalpana-vijnana 4th edition, 1993, Chaukhamba Subharti Prakashana, 301.
36. Acharya S.N. Mishra, Abhinava Bhaishajyakalpana-vijnana 4th edition, 1993, Chaukhamba Subharti Prakashana, 302.
37. S. Deshpande, A. Deshpande, S. Tupkari, A. Agnihotri, "Shata dhauta ghrita A case study", Indian Journal of Traditional Knowledge, Vol. 8(3), July 2009,387-391.
38. Ravindra, R.P. and Muslim, P.K., 2013. Comparison of physical characteristics of vanishing Cream base, cow ghee and shata-dhauta ghrita as per pharmacopoeial standards. International Journal of Pharma and Bio Sciences, 4(4),14-21.
39. Parihar, B.K., Thomas, S., Hussain, G., Kadibagil, V.R. and Lakshkar, A., 2016. Pharmaceutical Study of Shatadhauta Ghrita Prepared By Two Different Methods. Volume 5, Issue 5. 1769-1778
40. Mishra L. scientific Basis for Ayurvedic Ther apies, CRC Press LLC, 2004:3.
41. Malhotra A, Redberg RF, Meier P. Saturated fat does not clog the arteries: coronary heart disease is a chronic inflammatory condition, the risk of which can be effectively reduced from healthy lifestyle interventions. Br J Sports Med 2017;51:1111-2. <https://doi.org/10.1136/bjsports-2016-097285>.
42. Chinnadurai K, Kanwal HK, Tyagi AK, Stanton C, Ross P. High conjugated linoleic acid enriched ghee (clarified butter) increases the antioxidant and antiatherogenic potency in female Wistar rats. Lipids Health Dis 2013;12:121. <https://doi.org/10.1186/1476-511X-12-121>.
43. Malhotra A, Redberg RF, Meier P. Saturated fat does not clog the arteries: coronary heart disease is a chronic inflammatory condition, the risk of which can be effectively reduced from healthy lifestyle interventions. Br J Sports Med 2017;51:1111-2. <https://doi.org/10.1136/bjsports-2016-097285>.
44. Chinnadurai K, Kanwal HK, Tyagi AK, Stanton C, Ross P. High conjugated linoleic acid enriched ghee (clarified butter) increases the antioxidant and antiatherogenic potency in female Wistar rats. Lipids Health Dis 2013;12:121. <https://doi.org/10.1186/1476-511X-12-121>.
45. Gurav N, Gurav S, Wanjari M, Prasad S, Wayal S, Rarokar N. Development and evaluation of aphrodisiac potential of a classical ayurvedic formulation, 'Kaamdev ghrita' in rat model. J Ayurveda Integr Med 2021;12(2): 294-301. <https://doi.org/10.1016/j.jaim.2020.09.007>.
46. Gurav NS, Gurav SS, Sakharwade SN. Studies on Ashwagandha Ghrita with reference to murcchana process and storage conditions. J Ayurveda Integr Med 2020;11(3):243e9. <https://doi.org/10.1016/j.jaim.2019.10.004>.
47. Wayal SR, Gurav SS. Bhallatakadi ghrita: development and evaluation with reference to murcchana and shata-dhauta process. J Ayurveda Integr Med 2020;11(3):261-9. <https://doi.org/10.1016/j.jaim.2020.05.005>.
48. Wayal SR, Gurav SS. Evaluation of wound healing potential of Bhallatakadi Ghritaecow ghee based polyherbal formulation: in-vivo excision and incision wound model. J Compl Integr Med 2021.
49. Ahmad N, Saleem M, Atta BM, Mahmood S. Characterization of desi ghee extracted by different methods using fluorescence spectroscopy. J Fluoresc 2019;29:1411e21. <https://doi.org/10.1007/s10895-019-02453-6>.
50. Chuneekar KC. Bhav Prakasa Nighantu (Hindi translation). Banaras, India: Chaukhamba Vidya Bhavan; 1960. 86.
51. Simon A, Traynor K, Santos K, Blaser G, Bode U, Molan P. Medical honey for wound care—still the "latest resort"? Evid Based Complement Alternat Med 2009; 6:165-73.
52. Chauhan RS, Dhama K. Panchgavya (cowpathy): an ancient wisdom & modern science. Indian Cow Sci Econ J 2010;6:1-25.
53. Committee AP. The ayurvedic formulary of India. Partisans 2000; 1:367.
54. Pandey A, Pawar M. Panchagavya and Panchagavya Ghrita a conceptual study 2016;1:24-8.
55. Biyani DM, Verma PRP, Dorle AK, Boxey V. Wound healing activity of cow ghee: a veterinary case report. Int J Ayurvedic Med 2011;2. <https://doi.org/10.47552/ijam.v2i3.71>.
56. Shaikh SS, Ukande MD, Murthy K, Shete RV, Solunke RS. Traditional remedies for wound healing: a review. J Drug Deliv Therapeut 2019;9:761e4. <https://doi.org/10.22270/jddt.v9i4-s.3263>.
57. Nandanwar R, Gurjar H, Sahu VK, Saraf H. Studies on wound healing activity of gel formulation containing cow ghee and Aloe vera. Int J Pharma Sci Res 2010;1:50-4.
58. Ahire ED, Surana KR, Patil CD, Shah HS, Sonwane GB, Talele SG. Role of Omega-3 Fatty Acids in Different Neurodegenerative Disorders. InApplied Pharmaceutical Science and Microbiology 2020 Dec 16 (pp. 173-194). Apple Academic Press.
59. Thombre NA, Niphade PS, Ahire ED, Kshirsagar SJ. Formulation Development and Evaluation of Microemulsion Based Lornoxicam Gel. Biosciences Biotechnology Research Asia. 2022 Mar 31;19(1):69-80.