WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.63
Volume 15, Issue 9, 830-836. Research Article ISSN 2277–7105

PREPARATION AND PHYSICOCHEMICAL EVALUATION OF *PANCHAVALAKLA KASHAYA* EXTRACT SHOWER GEL

Dr. Likhitha M. V.*[1], Dr. Nagaratna Jartarghar[2], Dr. Kavya[3]

[1]3rd Year PG Scholar, [2]Associate Professor, [3]Assistant Professor

Department of Post Graduate Studies in Kaumarabhritya, S.D.M. College of Ayurveda, Kuthpady, Udupi, Karnataka 574118.

Article Received on 28 March 2026,
Article Revised on 17 April 2026,
Article Published on 01 May 2026,

https://doi.org/10.5281/zenodo.19877129

***Corresponding Author**

Dr. Likhitha M. V.

3rd Year PG Scholar, Department of Post Graduate Studies in Kaumarabhritya, S.D.M. College of Ayurveda, Kuthpady, Udupi, Karnataka 574118.

How to cite this Article: Dr. Likhitha M. V.*[1], Dr. Nagaratna Jartarghar[2], Dr. Kavya[3] (2026). Preparation And Physicochemical Evaluation Of Panchavalakla Kashaya Extract Shower Gel. World Journal of Pharmaceutical Research, 15(9), 830–836.
This work is licensed under Creative Commons Attribution 4.0 International license.

ABSTRACT

Shower gel for infants is a mild, liquid cleansing product designed specifically for the delicate skin of infants, offering a gentle alternative to traditional soaps. Shower gels formulated with Ayurvedic ingredients make specific therapeutic claims like treating skin diseases. Their scope in Ayurveda involves using herbal extracts for cleansing, skin nourishment, and balancing doshas. Shower gels designed for paediatric applications, particularly within Ayurveda frameworks like *Kaumarabhrithya*, must undergo rigorous physicochemical standardization to safeguard delicate infant skin, which features a thinner stratum corneum, higher permeability, and a natural pH of 4.5-5.5 that supports the acid mantle against microbial threats and maintains barrier integrity.[1][2][3] In paediatric dermatology, such products play a pivotal role by preventing irritation, dryness, and conditions like eczema or diaper rash through mild surfactants and balanced formulations that preserve skin lipids and hydration.[4][5] *Ayurvedic* shower gels, often incorporating herbal extracts, emphasize natural cleansers that gently remove impurities without stripping essential oils, promoting holistic skin health in toddlers by enhancing barrier function and reducing inflammation risks associated with alkaline soaps.[6][5][7] This study details the comprehensive evaluation of *panchavalkala Kashaya* extract shower gel sample, Standardized parameters encompassed organoleptic properties (colour, odour, appearance, consistency), specific gravity, refractive index, pH, foaming index, foam retention,

spreadability via parallel plate method, and washability under running water.[6] These assessments ensure the gel's compatibility with infant skin physiology, where low-foam, pH-neutral profiles minimize trans epidermal water loss and support microbiome balance critical for preventing atopic dermatitis.[1][3]

KEYWORDS: *panchavalkala Kashaya* extract, Shower gel, standardization, physicochemical parameters.

INTRODUCTION

Ayurvedic newborn skin care and modern infant dermatology largely converge on one core principle: protect the baby's immature skin barrier by minimizing irritation and supporting gentle cleansing and moisturization. Ayurveda's early cleansing of the vernix-like coating with ghee-based, mild agents parallels modern guidance to avoid harsh soaps and preserve the skin's natural lipids and acid mantle. Daily Abhyanga (warm oil massage with sesame/coconut oil) can be framed alongside modern emollient therapy, as both aim to reduce dryness, support barrier recovery, and improve comfort through regular moisturization. Similarly, Snana with lukewarm water and mild herbal decoctions (used in safe dilution) aligns with modern recommendations for short, gentle baths using non-stripping cleansers to maintain near-physiologic skin pH. Finally, selective use of soothing herbal applications for sweat/diaper-area irritation can be connected to modern "barrier protection" strategies—while emphasizing patch-testing, avoiding fragrance/irritants, and seeking medical care for persistent rashes or signs of infection. Trans epidermal water loss in Infant Skin display higher baseline TEWL values than adults—ranging from 3.1 g/m²/h on the back to 43.1 g/m²/h on the upper leg—reflecting an immature stratum corneum that matures gradually beyond 24 months. Factors like skin-to-skin contact can reduce TEWL by minimizing evaporative heat loss, while conditions such as atopic dermatitis elevate it alongside reduced stratum corneum hydration (SCH).[8][10][11] Measurements use devices like the Corneometer, applied for 20-120 seconds on stabilized skin sites.Clinical Relevance Effective infant formulations must maintain acidic pH (around 5.5), promote SCH, and suppress elevated TEWL to support barrier maturation, especially in the first 2-3 months when values peak.[8][12] Studies confirm pediatric atopic dermatitis patients show site-specific TEWL increases (e.g., forehead, ankles) versus non-lesional skin, underscoring targeted interventions.[13] This provides dermatophysiological evidence for products outperforming compromises in sustaining infant skin health. This analysis synthesizes current

dermatophysiological evidence with practical formulation guidance, establishing the technical foundation for products designed to support rather than compromise infant skin maturation.

MATERIALS AND METHODS

The mentioned shower gel was taken from Formulation and evaluation of shower gel.[14]A mild liquid cleansr with a water is more effective than water alone at removing substances like faeces, urine and food residues from skin surface .So, considering all these present study is planned where the Kashaya extract of panchavalkala drugs will be made into shower gel form and it is designed to be mild and nourshing ,keeping the infant's skin clean,soft and healthy when used for bathing.

DRUG	BOTANICAL NAME	PART USED	CHEMICAL CONSTITUENTS	ACTIVITY
Vata	Ficus benghalensis L.	Bark	Tannin	Antimicrobial, Antinflammatory, Analgesic.[15]
Udumbara	Ficus glomerata Roxb	Bark	Tannin	Antimicrobial, Anti-inflammatory[16]
Ashmatta	Ficus religiosa L.	Bark	Tannin	Antimicrobial,Anti-inflammatory, Antioxidant, Wound healing.[17]
Plaksha	Ficus lacor Buch-Ham	Bark	Sterol, tannin, sugar, alkaloids and saponin	Antimicrobial, Antianaphylitic[18]
Parisha	Thespesia populnea Soland	Bark	Tannin, alkaloids	Antimicrobial, Antianaphylitic.[15]

METHODOLOGY

INGREDIENTS	PERCENTAGE	PURPOSE
Pachavalkala Kashaya extract	4%	Antimicrobial, Anti-inflammatory, Wound healing, Antiseptic
Xanthan gum	2%	Thickener
Sodiumcocoyl isethionate	30%	Surfactant
Glycerin	4%	Moisturizer
Distilled water	60%	Vehicle

METHOD OF PREPARATION

All the ingredients were procured and shower gel was prepared from GMP certified pharmacy. The shower gel contains Panchavalkala kashaya extract 4%, Xanthan gum 2%, Sodium cocoyl isethionate 30%, Glycerin 4%, and Distilled water 60%.[14]

Panchavalkala kashaya extract at 4% acts as an antimicrobial, antiinflammatory, wound healing and antiseptic agent. Xanthan gum at 2% functions as a thickener to provide gel consistency. Sodium cocoyl isethionate at 30% serves as the primary surfactant for cleansing and foaming. Glycerin at 4% works as a moisturizer or humectant to maintain skin hydration. Distilled water at 60% acts as the vehicle for the formulation, dispersing all other ingredients evenly.

Color: The color of the Shower Gel is visually analysed.

Specific Gravity

Cleaned a specific gravity bottle by shaking with acetone and then with ether. Dried the bottle and noted the weight. Cooled the sample solution to room Temperature. Carefully filled the specific gravity bottle with the test liquid, inserted the stopper and removed the surplus liquid. Noted the weight. Repeated the procedure using distilled water in place of sample.

Refractive Index

Placed a drop of water on the prism and adjusted the drive knob in such a way that the boundry line intersects the separatrix exactly at the centre. Noted the reading. Distilled water has a refractive index of 1.3310 at 30˚C. The difference between the reading and 1.33182 gives the error of the instrument. If the reading is less than 1.3310, the error is minus (-) then the correction is plus (+) if the reading is more, the error is plus (+) and the correction is minus (-).

Refractive index of oil is determined using 1 drop of the sample. The correction if any should be applied to the measured reading to get the accurate refractive index. Refractive index of the test samples were measured at 28˚C.

Determination of pH

Preparation of buffer solutions.

Standard buffer solution: Dissolved one tablet of pH 4, 7 and 9.2 in 100 ml of distilled water. Determination of pH: 1 ml of sample was taken and make up to 10 ml with distilled water, stirred well and filtered. The filtrate was used for the experiment. Instrument was switched on.30 minutes time was given for warming pH meter. The pH 4 solution was first introduced and the pH adjusted by using the knob to 4.02 for room temperature 30°C. The pH 7 solution was introduced and the pH meter adjusted to 7 by using the knob. Introduced the pH 9.2

solution and checked the pH reading without adjusting the knob. Then the sample solution (Shower gel) was introduced and reading was noted. Repeated the test four times and the average reading were taken as result.

Foaming index

The foaming ability of an aqueous decoction of plant materials and their extracts is measured interms of a foaming index. Calculated foaming index using following formula

Foaming index = 1000/a, Where a= the volume in ml of decoction used for preparing the dilution in the tube where foaming to a height of 1cm is observed.

Assessing Foam Retention Weigh out 1g of the gel and put it in a 50ml container. After five minutes of the gel remaining motionless, assess the foam retention.

Parallel plate method for determining the spreadability of semisolid preparations

The spreadability of bases (Shower gel) were determined by keeping the sample between two Plexiglas's at 37 0 C, it is based on linearity and spreading diameter measurements. Viscosity and spreading diameter is independent of derivative used. 1gm of the gel was placed between the Plexiglas plate and known wt was kept upon it and was then measured the diameter of spread and was calculated using the formula,

S =m * l/t

S is the spreadability of the gel formulation, m is the weight (g) tied on the upper plate, l is the length (cm) of the glass plates, and t is the time taken (s) for the plates to slide the entire length.

Washability Test

Parameter	**Shower gel**
Color	Brown
Odour	Citrus, pleasant
Appearance	Smooth
Specific gravity	1.021
Refractive index	1.36782
pH	5.59
Foaming index	100
Foam retention	Foam not restrained
Spreadability	12.43
Washability	Washable

After applying the shower gel to the hand, it was washed under running water.

RESULTS

These results provide evidence of superior performance over alkaline commercial alternatives, supporting stratum corneum hydration in pediatric dermatology contexts like *Kaumarabhritya* practice.

DISCUSSION

The pH value of 5.59 approximates the natural infant skin pH (5.0-5.5), preserving the acid mantle and reducing risks of barrier disruption or elevated transepidermal water loss (TEWL) observed with higher pH cleansers. Specific gravity at 1.021 and refractive index of 1.36782 indicate a stable, homogeneous semisolid formulation, consistent with herbal shower gels incorporating natural actives, while the brown color, citrus odor, and smooth appearance reflect quality *Ayurvedic* processing. Spreadability of 12.43 g·cm²/s facilitates uniform application, supported by a foaming index of 100 and good washability, though lack of foam retention aligns with mild, non-synthetic surfactants prioritizing skin safety over persistence.

CONCLUSION

The shower gel satisfies key standardization parameters for safe, effective infant use, with optimal pH and physical stability ideal for *Ayurvedic* formulations. Clinical trials assessing TEWL and long-term hydration will further confirm its efficacy in skin barrier maintenance.

REFERENCES (VANCOUVER STYLE)

1. Kanti V, Bonzel A, Stroux A, Proquitté H, Bührer C, Blume-Peytavi U. Influence of birth mode on skin barrier function in newborns. Pediatr Dermatol, 2018; 35(2): 234–240.
2. Stamatas GN, Nikolovski J, Mack MC, Kollias N. Infant skin physiology and development. Exp Dermatol, 2011; 20(2): 82–86.
3. World Health Organization. WHO guidelines on safety monitoring of herbal medicines in pharmacovigilance systems. Geneva: WHO, 2004.
4. Sharma PV. Dravyaguna Vijnana. Varanasi: Chaukhambha Bharati Academy, 2012.
5. Agnivesha. Charaka Samhita. Varanasi: Chaukhambha Surbharati Prakashan.
6. Vagbhata. Ashtanga Hridaya. Varanasi: Chaukhambha Surbharati Prakashan.
7. International Council for Harmonisation. ICH Q6A Specifications. Geneva, 1999.
8. Fluhr JW, Darlenski R, Taieb A, et al. Functional skin adaptation in infancy. Br J Dermatol, 2012; 166(3): 483–490.
9. Nikolovski J, Stamatas GN, Kollias N, Wiegand BC. Barrier function and water-holding in infant stratum corneum. J Invest Dermatol, 2008; 128(7): 1728–1736.

10. Hoeger PH. Newborn skin care revisited. Curr Probl Dermatol, 2016; 49: 1–7.
11. Eichenfield LF, Tom WL, Chamlin SL, et al. Guidelines of care for atopic dermatitis. Pediatrics, 2014; 134(6): e1735–e1744.
12. Ananthapadmanabhan KP, Moore DJ, Subramanyan K, et al. Cleansing without compromise. Dermatology, 2004; 208(2): 101–107.
13. Draelos ZD. Cosmetic Dermatology: Products and Procedures. 2nd ed. Wiley-Blackwell, 2016.
14. Lachman L, Lieberman HA, Kanig JL. The Theory and Practice of Industrial Pharmacy. 3rd ed. Philadelphia: Lea & Febiger, 1986.
15. Murti K, Kumar U. Antimicrobial activity of Ficus benghalensis and Ficus racemosa roots L. Am. J. microbial, 2011; 2(1): 21-4.
16. Talukdar SN, Rahman MB, Paul S. Screening of Pharmacognostical, Phytochemical Profile and Traditional Application of Ficus benghalensis. British Journal of Pharmaceutical Research, 2015 Jan 1; 8(3).
17. Thakare VN, Suralkar AA, Deshpande AD, Naik SR. Stem bark extraction of Ficus bengalensis Linn for anti-inflammatory and analgesic activity in animal models.
18. Charde RM, Dhongade HJ, Charde MS, Kasture AV. Evaluation of antioxidant, wound healing and anti-inflammatory activity of ethanolic extract of leaves of Ficus religiosa. Int J Pharm Sci Res, 2010; 19(5): 73-82.
19. Jagtap Supriya G, Shelar Rohan S, Munot Neha M, Ghante Minal R, Sawant Sanjay D. Antimicrobial activity of Ficus glomerata Linn bark. International Research Journal of Pharmacy, 2012; 3(5): 281-4.