

# Cow Urine - A Potential Ayurvedic Ingredient in Cosmetics

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**Abstract:** The origin of Ayurvedic Cosmeceutical dates back to the Indus civilization and is being used in human society from ancient time. It has now gained importance in the beautification and help to cure the skin ailments. Due to increasing demand of Ayurvedic Cosmeceutical, various Ayurvedic ingredients are used in cosmetic formulation. Cow urine is one of the ayurvedic ingredient uses in cosmetic products because of its amazing properties. It is one of the five contents of panchgavya which is obtained from cow. It has various important medicinal and therapeutical values. Cow urine contains many essential compounds like vitamin A, B, C, D, E, minerals, lactose, Allantoin, iron, nitrogen, sulphure, citric, chlorine, gold acids, enzymes etc. This article covers the pharmacological property of cow urine such as antioxidative property, antifungal property, wound healing property, keratinolytic property and antimicrobial property.

**Key Terms:** Antibacterial, Antioxidant, Antifungal, Wound healing

**I. Introduction**– Cow, *Bos indicus* is the most valuable animal in all Veda and it is called as the mother of all. [1] Cow urine is a liquid discharge consisting of nontoxic waste material from the cow body.[2] It is one of the ingredients of Panchgavya is believed to have therapeutic value and is used in many drug formulations.[3] Urine of pregnant cow is considered special. It is claimed to contain special hormones and minerals.[4] It has also been observed that cow urine of Indian cow is highly effective as compare to the other species.[5]It is most widely referred and venerated animal urine because of its properties. Externally it is used as lotion, ointments, and bath, but internally it is used in preparation of oral medication and drinks.[3]Cow urine is now being used in cosmetics products. It has become a new trend. Cow urine contains many useful chemical which show antioxidative, antifungal, wound healing, Disinfectant properties. Because of these properties, it is used in cosmetic preparation.

## II. Detailed review of the material -

Cow urine is called with different names in different languages. In Sanskrit, it is called Gojal, Sodrava, and Surabhijal. In Hindi, it is called Gomutra. In Marathi, it is called Gomteerth.[6]

Cow urine can be used in different form:

- Fresh cow urine
- Cow urine distillate
- Photoactivated cow urine

a) **Cow urine collection:** Healthy cow urine is selected for collection of cow urine and 3 criteria should be fulfilled-

- Cow urine should be healthy and not have any disease. The cow which roams in jungle, exercises herself, drink clean water and medicinal herbs are suitable for urine collection.
- Indian traditional cows are suitable for cow urine but jersey and crossbreed cow are not suitable.
- Cow urine can be collected from any age group of cows. It can be collected in Earthen, glass, china clay, and steel pot.

b) **Preservation of cow urine:** Cow urine can be stored for longer period of time without any deterioration. Due to the presence of copper and iron, its color may vary from black or red but the quality remains same. Cow urine is collected and kept for photoactivation. Chromatography technique was used to purify it. Then all the precipitated material was removed and the purified cow urine was stored at 4°C. Cow urine should be covered properly to protect from the dust.[7]

**III. Chemical Composition of Cow Urine**-This table shows the concentration and percentages of components present in the cow urine.[8] [9]

Table No. 1 Chemical Composition of Cow Urine

Sr. no.	Constituents	Concentration / percentages
1.	Water	95%
2.	Urea	2.5%
3.	Minerals, Slats, Harmones, Enzymes	2.5%
4.	Ammonium Nitrogen	1-1.7ml/kg/day
5.	Calcium	0.1-1.4ml/kg/day
6.	Chloride	0.1-1.1mmol/kg/day
7.	Creatinine	15-20mg/kg/day
8.	Potassium	0.08-0.15mmol/kg/day
9.	Uric acid	1-4mg/kg/day
10.	Allantoin	20- 60ml/kg/day

Different types of enzymes are also present in cow urine. Some of the enzymes are:

Vitamin C, vitamin B1, vitamin B2, Protein, free volatile Phenol, compound volatile Phenol.

Other Parameters of cow urine are:

- Specific gravity ranging from 1.025 – 1.045kg per meter cube.
- 23–28ml/kg/day and 40 – 45ml/kg/day urea nitrogen and total Nitrogen is present in cow urine respectively.
- pH: Its pH ranges between 7.4 - 8.4 with seasonal variations.

IV. **Traditional use of cow urine**– In India cow urine is being used since a very long time for several problems like wounds, skin problems etc. [10] Many researchers have quoted that rational use of cow urine eliminates any non- functionality of diabetes, cancer, hepato protective activity, autoimmune disorders AIDS and many others. [11, 12] Traditional use of cow urine as medicine alone or with certain synergistic drugs has been described in table 2 [3, 13]

Table no. 2: Traditional uses of cow urine and some Ayurvedic adjuvant in certain diseases

Sr. no.	Diseases	Cow urine along with adjuvant
1.	Fever	Cow Urine+pepper, curd, ghee
2.	Leprosy	Dhruhardi, urine
3.	Deformation condition in leprosy	Nimbuchal, urine
4.	Chronic leprosy	leaves of Vasaka and kaner, bark of Neem and Kuraila , urine
5.	Anemia (Pandu )	a) cow milk, cow urine, tripala b) loh bhasma, urine, milk

V. **Therapeutic use of cow urine**-Cow urine also used for therapeutic purpose. It helps to solve many internal problems of body as shown in table no. 3 [2,14]

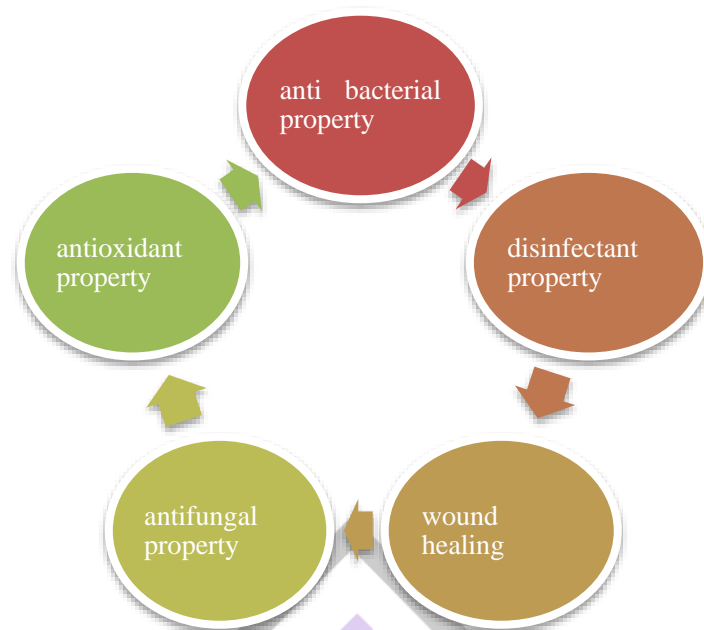
Table no. 3- Therapeutic use of cow urine

Sr. no.	Substances present in cow urine	Positive effects on human body
1.	Ammonia	Helps in stabilizing three properties; Bile, Mucous and air of body. Also improves blood formation.
2.	Calcium	Basic strength to bones is provided by calcium and also has germicidal power with blood purification property.
3.	Uric acid	Prevent the swelling of heart inflammation. It is diuretic therefore destroys toxins.
4.	Vitamins A, B, C, D, E	Active ingredient for energetic life is vit. B and effects of nervousness and thirst is also prevented

VI. **Cosmeceutical properties of cow urine**-Cow urine used not only for therapeutic and traditional purpose but also for Cosmeceutical products, which are helpful to improve the external skin conditions.

#### Diagram No. 1.

This diagram show the properties which are helpful for the external skin conditions. Such as antimicrobial , disinfectant, antioxidant, wound healing. [15,16]



#### a) Antibacterial property :

An antibacterial is an agent which stops the growth of microorganisms by killing them or by inhibiting their growth. Some agents help to kill the bacteria called bactericidal agents, some help to inhibit their growth are called bacteriostatic agents. [17] According to Anami Ahuja et al. different cow urine samples were taken (fresh cow urine, photoactivated cow urine) to check and compare the antimicrobial property of both types of cow urine and it was concluded that different cow had different level of antimicrobial properties. Fresh cow urine was more effective than photoactivated cow urine because it is more acidic in nature. According to Anami Ahuja et al. another research was carried out to determine the antimicrobial property by checking the optical density after every hour and there was decrease in optical density which showed that cow urine has antimicrobial property. [18] According to Sahu Rekha et al. the cow urine and its distillate were tested for antimicrobial property and it was found that fresh cow urine was better than its distillate. [16]

**b) Disinfectant property**– Disinfectant can help to kill the microbes on the floor or inert surfaces so can be used as disinfectant agents. [19] According to S.A Mandavgane et al. it can be helpful in the preparation of disinfectant when used with some natural herbs. [20]

#### c) Wound healing , keratinolytic, moisturizing, anti- irritant effect-

Wound healing is a complex process in which the skin and the tissues under it repair themselves after injury. [21] Allantoin is one of the constituents of cow urine. It is an active skin active ingredient which helps in the renewal of epidermal cell. Allantoin enhances epidermal cell- proliferation, promotes the regeneration of damaged epithelium and accelerates wound healing. Allantoin forms complexes and neutralizes many irritant and sensitizing agents and give skin protectant effect, anti – irritant and soothing property. [22] According to Sahu Rekha et al. Cow urine helps in wound healing because of its antiseptic property but the healing time is somewhat less in comparison to wound on which antiseptic cream was applied. [19, 23]

#### d) Antioxidant activity –

The body produces free radicals due to environment stress and pressure and these free radicals damage the cells. So, the antioxidants are used to prevent or slow the damage of cells. [24] According to Edwin Jarald et al. DPPH radical scavenging activity and superoxide scavenging activity was carried out to check the antioxidant activity of fresh cow urine and its distillates. [1] It was observed that fresh cow urine was found to be more active than its distillate and they inhibited the free radicals. Fresh Cow Urine activity was comparable with that of the standard, ofloxacin. Damaging effects of free radicals is neutralized by antioxidant, which are natural by products of cell metabolism. The result suggested that the antioxidant action is attributed to the free radical scavenging activity of the urine components and these components may prevent the process of aging. [1,25] Another research was carried out by B. Rachna et al. by different methods and it indicated that cow urine possesses potent antioxidant property. Adult raw cow urine has shown more efficacy than adult distilled cow urine. [26]

**e) Antifungal activity** – The agents that help to kill or inhibit the growth of fungi are called antifungal agents. Agents that kill fungi are fungicidal and the agents which inhibit the growth of microorganisms are called fungistatic. [27] A Research was carried out by Dr. Sanyogita s. et al. against many fungi using outdoor feeding cow urine sample and indoor feeding cow urine sample. It was proved that cow urine can act as an effective antifungal agent. Inhibition of fungi growth was more by using outdoor feeding cow urine sample as compared to indoor feeding cow. [28] Another research was carried out by Dhananjay Desai et.al. against test fungus *aspergillus Niger*, *aspergillus flavus* and *Fusarium sp.* It was concluded that cow urine can be control to minimize fungal infections and future investigation is required to clarify role of actual lead compounds present in cow urine against fungal pathogen. [29] Another research was carried out by K.N Rakesh et al. to check the efficacy of fresh and stored cow urine to inhibit test fungi. It was observed that stored cow urine is more effective than fresh cow urine [30].

VII. **Reported pharmacological activities and chemical constituents of cow urine**- Cow urine show many pharmacological activities and it is because many chemical constituents which are present in it. These chemical constituents are mentioned in table No. 5

Table no. 4- Reported pharmacological activities and chemical constituents of cow urine [31]

Sr. no.	Activity	Constituents
1.	Antimicrobial activity	Urea, creatinine, aurum hydroxide, carbolic acid, phenols, calcium and manganese
2.	Wound healing, keratinolytic	Allantoin
3.	Antioxidant property	Uric acid, Allantoin
4.	Antifungal; activity	Phenolic acids (Gallic, caffeic, ferulic, o- coumaric, cinnamic and salicylic acids).

VIII. **Cow Urine in Cosmetic Products**– cow urine can be incorporated products to enhance the effect of cosmetic products.

**i) Cow urine as an ingredient in skin care products-**

Cow urine has an antioxidant property so can be incorporated in –

- Anti-aging cream
- Anti-wrinkle cream

It has an antimicrobial property so it can be incorporated in –

- Acne cream
- Face wash for pimples
- Soaps to kill germs

**ii) Cow urine as an ingredient in oral care products –**

- Toothpaste
- Mouthwash

**iii) Cow urine in hair care products –**

- Anti- dandruff shampoo
- Anti-lice shampoo
- Hair fall control shampoo
- Hair tonic

IX. **Disadvantages** – It can show reaction on sensitive skin because alkali is present in higher concentration. So, to avoid the rashes and allergies it should be added in low concentration. [32] Cow urine become toxic in 6-8 hrs. after obtaining from cow so it is necessary to do distillation immediately. [33]

X. **Smell of Cow Urine** – Mostly Gomutra Ark (which is distilled cow urine) is incorporated in cosmetics preparation as it lacks smell. After distillation its smell is reduced. [34]

XI. **Discussion and Conclusion-**

The above literature survey reveals the fact that, the cow urine as associated with Ayurveda for body wellness is thus found to connect potentially on cosmetic grounds for their uses in skin care. The satisfactory number of phytochemical agents makes it an ideal ayurvedic ingredient for use in cosmetic products. It may be certainly beneficial to be used as an alternative to chemical ingredients if more studies are made on its toxicity also. Many researches showed its activities like antimicrobial, antifungal, antioxidant, wound healing which are helpful in cosmetic products. Its antioxidant activity can help to cure the wrinkles on skin and also the process of aging. It can be used in sunscreen lotions or cream to protect from harmful sunrays. Antifungal activity was carried out against many fungi and it showed that it can be help to treat against many fungi disorder like athlete's foot, and to resolve the dandruff problem in hair. It can also help to control the lice in hair. It can be added in moisturizing cream as it can help in skin regeneration. It can be helpful to cure the pimples on face because of its antimicrobial property. But it has been reported that, used in lower concentration because it can show irritancy on sensitive skin. These ayurvedic ingredients can be researched more for its inner blend of bioactive and examine their nature and hence bring to forefront the magical constituents that may be extremely useful for human skin. Thus, cow urine may be an ideal ayurvedic ingredient useful for cosmetic if incorporated in proper amount.

XII. **Acknowledgement-**

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