

# A Review on Nutraceutical and Pharmacological Potential of Cow Urine Distillate

Author: Shailesh Pendor<sup>1</sup>

Co Authors: Manisha Basantwani<sup>2</sup>, Rutuja Savakhande<sup>3</sup> and Ankita Pande<sup>4</sup>

<sup>1</sup>Shri Ganpati Institute of Pharmaceutical Sciences and Research Tembhurni, Dr. Babasaheb Ambedkar Technological University, Lonere, MS, India

<sup>2</sup>Gondia college of Pharmacy Gondia, Dr. Babasaheb Ambedkar Technological University, Lonere, MS, India

<sup>3</sup>Government College of Pharmacy, Karad, Shivaji University Karad, MS, India

<sup>4</sup>Department of Pharmaceutical Sciences, RTMNU Nagpur University, Nagpur, MS, India

## ABSTRACT

Cow urine distillate (CUD), a traditional medicine in Ayurveda and other indigenous medical systems, gained interest due to its possible pharmacological and nutritional effects. This article explores the chemical components, traditional use, and scientific evidence supporting its health benefits. CUD is said to possess antioxidant, antibacterial, anti-inflammatory, immunomodulatory, and anticancer properties. Its historical significance notwithstanding, further research is necessary to verify its efficacy, safety, and mechanisms of action. This review highlights CUD's potential as a therapeutic agent and discusses its chances for use in modern medicine.

**Key Words** *Cow urine distillate, Immunity, Ayurvedic, Cow urine, Panchgavya*

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## INTRODUCTION

Because of the current pandemic crisis and growing emphasis on total health, nutraceuticals are becoming more and more important. Nutraceuticals comprise goods that support immune system health and illness prevention. "Nutrition" and "pharmaceuticals" are included in the name nutraceuticals. The term "nutraceutical" was initially used in 1989 by Dr. Stephen DeFelice, who established the Foundation of Innovation Medicine in Crawford, New Jersey<sup>1</sup>. India is a place of traditions, and its scientific heritage dates back thousands of years, providing

a direct relationship between social customs and their scientific justifications. A cow is referred to be "*Gaumata*" or "*Kamadhenu*" in India because of its motherly-like ability to nourish. In Ayurveda, cow urine is a key medicinal drink used for therapeutic purposes<sup>2</sup>.

Cow urine distillate (CUD) has been used for centuries in traditional medicine systems, particularly in Ayurveda, where it is considered a vital component of *Panchagavya* (a mixture of five cow products: milk, curd, *ghee*, urine, and dung). It is believed to possess detoxifying, healing, and rejuvenating properties. In recent

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years, scientific interest in CUD has grown due to its potential as a nutraceutical and pharmacological agent. This review aims to provide a comprehensive analysis of CUD's chemical composition, traditional uses, and evidence-based health benefits. In the past, cows were commonplace in Indian homes regardless of one's religious beliefs; today, however, they are rare. The many health advantages of cow adoption began with the products made from their urine, dung, manure, milk, yogurt, and *ghee*<sup>3</sup>.

Nutraceuticals are products that are utilized for medical purposes in addition to nourishment. A nutraceutical product can be defined as a substance that has physiological benefits or protects against chronic diseases. Nutraceuticals can be used to promote health, prevent chronic diseases, extend life expectancy, and maintain the structure and function of the body. Nowadays, nutraceuticals have received considerable interest due to potential nutritional, safety and therapeutic effect<sup>4</sup>.

A nutritional supplement is any product made from food sources that offers extra health benefits beyond the fundamental nutrients found in food. The need for a higher quality of life among consumers has sparked the "Nutraceutical revolution" and the hunt for complementary or alternative helpful products. Nutraceuticals' sustained consumer acceptability stems from their affiliation with traditional medicine. Despite its recent rise in popularity, the concept of

nutraceuticals has its origins in ancient India's traditional Ayurvedic medicine<sup>5</sup>.

### Chemical Composition of CUD

cow urine is nontoxic in nature. It contains 95% water, 2.5% urea and the remaining 2.5% a mixture of minerals, salts, hormones and enzymes as mentioned in table no 1.

**Table 1** Traditional uses of cow urine<sup>6</sup>

Disease	Gomutra along with adjuvant
Leprosy	Dhruhardi, Urine
Fever	Urine, Pepper, Curd, Ghee
Epilepsy	Neem bark, Mustard oil, Sompada bark
Anaemia (pandu)	Cowmilk, <i>Triphala</i> , <i>Lohbhasma</i>
Chronic Leprosy	<i>Vasaka</i> leaves, Neem bark, Kaner leaves

Cow's urine, also known as *Gomutra*, contains a rich mix of nutrients, including:

- Minerals: iron, copper, magnesium, calcium, etc.
- Vitamins: A, B, C, D, E
- Acids: carbonic acid, uric acid, gold acids
- Enzymes and hormones
- Immune-modulatory compounds: aureum hydroxide

These constituents help balance the body's micro-nutrients, boost immunity, and remove toxins. Drinking *Gomutra* daily can compensate for the loss of these micro-nutrients through urination<sup>3</sup>. All living things, including bacteria, plants, and animals, create proteins called enzymes. They act as highly selective catalysts, transforming one molecule into another without undergoing changes themselves.

Notably, cow urine contains various essential enzymes that:

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- Catalyze metabolic reactions
- Support life-sustaining processes
- Demonstrate significant biological importance

These enzymes highlight the potential therapeutic and nutritional value of cow urine.

Enzymatic analysis of cow urine in table no. 2

**Table 2** Enzymes found in cow urine<sup>7</sup>

Enzymes	Vit. B1, Phosphorous, Creatinine, hydrogenase, Aromatic hydroxyl phosphatase	Vit. B2, Vit. C, Amylase, Lactase, Uric acid, Free phenols, Lactate, Acid Phenol,
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**Nutraceutical Potential**

The biochemical profile and antioxidant activity of cow urine (CU) from adult, pregnant, lactating, and calves were investigated. The results showed variations in the biochemical elements of a number of CU samples, including as minerals, urea, and uric acid. The antibacterial qualities of adult CU come from its highest concentration of total phenol. Lactating CU exhibited the highest antioxidant activity, as well as a superior reducing capacity and the ability to inhibit free radicals. Raw CU samples demonstrated superior radical scavenging activity, but distilled CU samples demonstrated superior Fe<sup>3+</sup> reduction capability. The study emphasizes the potential of cow urine as a natural source of antioxidants and bioactive chemicals<sup>8</sup>.

Cow urine was analyzed using ICP-MS to find different components in CUD. In CUD, the following components are present: (table no. 3)

**Table 3** Elements in cow urine

Name of Elements	Elements level(ppb)
Sodium	7605.901
Calcium	1311.903
Chromium	0.187
Iron	19.555
Magnesium	24836.975
Aluminium	7.555
Potassium	3230193.196
Zinc	81.308
Gold	85.34

ICP-MS is used for elemental analysis of drugs<sup>9</sup>. Cow urine contains many nutritional elements which is beneficial to improving overall health which mentioned in table no 4.

**Table 4** Trace elements found in cow urine distillate<sup>10</sup>

Constituents	Importance
Ammonia	Ammonia supports in the stabilization of the body's air, mucus, and bile. enhances blood formation as well.
Aurum Hydroxide; AuOH	It has a germicidal effect; also, AuOH is anti-toxic and antibiotic, which boosts the body's immunity.
Calcium; Ca	gives bones their fundamental strength and has germicidal properties that aid blood purification.
Carbolic acid; HCOOH	It can stop ulcers and has a germicidal effect, which stops bacteria from growing.
Copper; Cu	enhances magnetic ray absorption capacity and regulates the accumulation of extra fat.
Creatinin; C <sub>4</sub> HgN <sub>2</sub> O <sub>2</sub>	enhances antimicrobial activity.
Enzymes	boosts immunity and facilitates better digestion
Hipuric acid;	helps in the elimination of harmful substances through urine
Iron; Fe	keeps things in balance as well as helps in the synthesis of hemoglobin and red blood cells.
Lactose; C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>	reduces anxiety and helps in heart strengthening.
Manganese; Mn	Better germicidal power is provided. prevents the growth of germs, preventing deterioration that could result in gangrene.
Nitrogen; N <sub>2</sub> ,	avoids blood irregularities and the effects of toxins; it also activates the kidneys and is a natural urinary track stimulant due to its diuretic nature.

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<b>Phosphate; P</b>	helpful in reducing the development of urinary tract stones.
<b>Potassium; K</b>	treats inherited rheumatism. makes you feel ravenous. eliminates tardiness and weak muscles.
<b>Sodium; Na</b>	Because NaCl has an antacid ability and lowers the blood's acidic content, it aids in blood purification.
<b>Sulphur; S</b>	enhances intestinal bowel movement. makes blood clean.
<b>Urea; CO(NH<sub>2</sub>)<sub>2</sub></b>	enhances the production of urine. has a germicidal effect as well.
<b>Uric Acid; C<sub>5</sub>H<sub>4</sub>N<sub>4</sub>O<sub>3</sub></b>	inhibits the growth of inflammation in the heart. It eliminates contaminants since it is a diuretic.
<b>Vitamins A, B, C, D, E</b>	Vitamin B is an essential component for a healthy, active life and guards against the negative effects of anxiety and thirst. Additionally, it increases a person's bone strength and ability to procreate.
<b>Water; H<sub>2</sub>O</b>	It keeps the blood flowing which helps in regulating body temperature.
<b>Other Minerals</b>	help in increasing the body's capability of immunity.

### Pharmacological Activities

#### Analgesic activity

Comparable to the traditional, contemporary analgesics that are regularly used, cow urine and its distillate have very strong analgesic efficacy. They offer a compelling argument for conversion into an appropriate formulation when taking into account their additional benefits. The steroidal moieties and some volatile fatty acids, whose existence in cow urine has been demonstrated by other similar research employing chemical and physical analysis, are responsible for their analgesic action<sup>11</sup>.

#### Bioenhancer

Rifampicin, the first-line anti-tubercular medication used to treat tuberculosis, has bio-

enhancing activity in cow urine that can increase its effectiveness up to seven times against *Escherichia coli* and up to eleven times against Gram-positive bacteria. The transfer of antibiotics, such as ampicillin, tetracycline, and rifampicin, across artificial membranes and the intestinal wall is improved by cow urine distillate. The range of transport enhancement is roughly two to seven times<sup>12</sup>.

#### Antidiabetic

Significant results were reported in a study examining the antidiabetic effects of cow urine distillate in rats with diabetes induced by streptozotocin. The cow urine distillate enhanced lipid profiles and reduced high blood glucose levels by increasing HDL levels and decreasing serum cholesterol and triglycerides. Furthermore, the body weight of the treated mice increased significantly. Interestingly, the effects of the distillate of cow urine were similar to those of Glibenclamide, a common antidiabetic medication. The presence of free radical scavengers and antioxidants in cow urine may be responsible for the antidiabetic effects<sup>13</sup>.

In diabetic wounds, cow urine can significantly boost the amount of collagen and the production of granulation tissue. Because of its ability to promote the production of granulation tissue, it may therefore be helpful in hastening the healing of wounds in diabetes patients<sup>14</sup>.

#### Anticancer

Cow urine therapy has been shown to have anti-cancer potential in a number of case studies, patient testimonies, and success stories. A  
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person's immunocompetence and overall health are improved by cow urine, which also acts as an anti-aging agent by preventing the generation of free radicals, reducing lymphocyte apoptosis and promoting their survival, and effectively repairing damaged DNA, making it an excellent cancer treatment <sup>15</sup>.

### Antifungal

Cow's urine distillate (CUD) has the potential to be used as an alternative medication to treat candidiasis because it effectively inhibits the growth of drug-resistant *Candida* species, such as *A* study identified *Candida albicans* ATCC 14053, *Candida tropicalis* ATCC 66029, *Candida krusei* ATCC 6258, and *Candida parapsilosis* ATCC 22019. Since it inhibited the growth of both drug-resistant and susceptible *Candida* isolates, the presence of phenolic acids in CUD may be the cause of its antifungal qualities. CUD also decreased spore germination and shown antioxidant qualities. However, more research is necessary to determine the precise mechanism by which CUD inhibits fungal development <sup>16</sup>.

### Antibacterial

Photoactivated cow urine's antibacterial activity on a variety of bacterial cultures and contrasted it with tetracycline's antimicrobial action. Tetracycline and photoactivated cow urine demonstrated distinct zones of inhibition in millimeters against six harmful bacteria. A wide variety of Gram +ve and gram -ve bacteria were shown to be effectively inhibited by cow urine <sup>17</sup>.

## CONCLUSION

CUD has much pharmacological and nutraceutical potential, which is beneficial to overall health. It contains elements like Na, Ca, K, Fe, Au, and Mg in adequate quantities. The presence of *Swarna-Kshar* helps to improve the immunity of human beings. CUD may enhance the activity of various drugs. Cow urine possesses many pharmacological activities due to the presence of various elements in adequate quantities

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