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Cow Urine: Mediated Antibiosis and Immune Modulating Anthelmintic Agent

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Abstract

In India, for many cultures, the cow (or Kamadhenu) is a sacred animal. The current research set out to determine if cow urine concentrate made through total evaporation of cow urine retained any of its antimicrobial, antifungal, or anthelmintic properties. The disc diffusion method was utilized to examine antimicrobial activity against both Gram-positive and Gram-negative bacteria. Antifungal activity was evaluated against several Aspergillus species using the agar-well diffusion technique. An adult Indian earthworm model was used to study the anthelmintic activity. The CUC noticed a notable inhibition of Gram-positive bacteria. It was discovered that fungi inhibition was dose-dependent. Among the tested fungi, A. niger showed the greatest sensitivity. Worm mortality in the anthelmintic assay was found to be concentration dependent and CUC was found to have a more beneficial effect than the gold standard anthelmintic, piperazine citrate. The antibacterial and anthelmintic properties of CUC may be due to the presence of components. CUC can be used to treat conditions caused by opportunistic fungi, parasitic helminths and pathogenic bacteria. Isolation of inhibitory components and *in vivo* experiments require further study.

Keywords: Cow urine • Antimicrobial activity • Anthelmintic activity • Antibiotic property

Introduction

Cow urine as contrasted in India mythological scripture 'Veda' too has been used as a remedy for centuries. Being one of the most potent animal secretions, it has countless therapeutic benefits. The value of cow urine increases with age. It is not corrosive. Copper and gold salt, which are elixirs, are found in cow urine. Diseases can be cured by the cold. Misery and disease are destroyed by cow urine. It cleanses the body and the mind (R. kavya). According to a study done by Kiwuso, et al., termites can be controlled with cow urine, wood ash and red pepper. The conidial germination of a plant pathogen was studied by Nargis Akhtar, along with the inhibitory effect of some plant extracts and cow urine (2006). In pathogenic gram+ and gram-bacteria, Dalbergia sisso and Datura stramonium were found to have antibacterial properties in cow urine H. Yadav 2008 [1,2].

While outdoor grazing cows receive a variety of fresh plant material to consume, indoor cows are fed on fodder that has been prepared for animal feeding. There may be a change in the composition of their urine as a result of this. Comparative research on the influence of these urine samples on microbial growth would be interesting.

There hasn't been much information on the antifungal activity of cow urine up until now. Thusly, the objective of the ongoing review was to inspect the antifungal capability of cow urine.

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Background of the study

Cows are like mobile hospitals and cow urine is a cure-all for any ailment. Charaka Samhita, Sushruta Samhita, Vridhabhagabhatt, Atharva Veda, Bhavaprakash, Rajni Ghuntu, Amritasagar and other ancient holy texts attest to the efficacy of cow urination in treating a wide range of diseases, both those that can be cured and those that cannot [3].

Gomutra, also referred to as cow's urine, has many benefits for treating a variety of illnesses. It is an efficient drug or secretion of animal origin with countless therapeutic properties and has been described as having a special place in Ayurveda [4].

Using cow urine as a Biostimulant

When combined with an active ingredient, the bio-availability and bio-efficacy of both the active ingredient and the bio-enhancer are increased. Cow's urine helps make bioactive molecules like antibiotics, antifungal and cancer treatments more active and more readily available. This distillate speeds up the vehicle of anti-microbial across the stomach wall by two to multiple times in creature cells and gram-positive and gram-negative microscopic organisms at 40 to 50°C. In addition, it enhances the performance of the Gonadotropin-delivering chemical (GnRH-BSA), which is formed from ox serum and egg whites. The GnRH-BSA form negatively affects the estrous cycle and regenerative chemicals in female mice. Concentrated cow pee acts as a bio-enhancer of vaccination efficacy, mitigating these effects [5].

Literature Review

For therapy of sicknesses: As shown by Sushrut Samhita (Sutrasthana 46/220-221) [6], it is used for therapy of Shoola (colic), Gulma (stomach disease), Udararoga (advancement of the mid-locale) and Aanah (honking), Cow pee is significant for therapies like Virechana karma (purgation), Aasthapanvasti (decoction douche, etc. In ailments which are referred to as reparable by pees, there cow's pee just should be used [7]. According to Charak Samhita sutra sthan 1/102 destroys Krimi (worms) and Kustha (affliction), disposes of Kandu (shivering) and taken inside is helpful in udararoga (expanding of the midriff) achieved by tridosha [8]. According to Astang Samgraha (Sutrasthana 6/141-143),

it is significant for therapy of Krimiroga (worm), Shopha, Udararoga (expansion of the mid-locale), Aanah (fart), Shoola (colic), Panduroga (Whiteness), Kaphavikar, Tank vikar, Gulma (stomach malignant growth), Aruchi, Vishvikar, Shvitraroga, Kushtaroga (contamination) and Arshroga (heamorroid). It is used for Virechana (purgation), Aashthapanavasti (decoction douche), Aalepa, Swedana (Sweating). It is Agnideepak, Paachak and Malabhedak [9-12].

Gomutra and Haritaki (Terminaliachebula) are beneficial in the treatment of Kaphajshoth and Pandu and can be used to prepare various preparations [13].

For shodhan of different dravya, like Abhrak (mica), Kansa (bronze), Jasta (zinc), Tamra (copper), Tutiya (copper sulfate), Naga (lead), Rajavarta, Roupya (silver), Kant Lauha and Swarna (gold), as well as harmful medications like Vatsanabh and Dhaturbija, it is additionally [14].

Modern perspective

The agricultural and medical communities have found great value in using cow urine for its many beneficial qualities. Recently, cow urine received a US patent for its medicinal properties, especially in combination with antibiotics, to fight bacterial infections and fight cancer (Dharma, 2005a). Currently, India attaches great importance to the medical use of cow urine [15].

Material and Methods

Preparation of CUC

A local breed of cow's urine was collected in a clean container (Amrit Mahal). Filtered cow urine underwent a distillation process. Following distillation, the leftover material was evaporated to create a pasty mass that was then used for anthelmintic and antimicrobial activity.

Antibacterial activity of CUC

Utilizing the circle dissemination strategy, the antibacterial adequacy of CUC was thought about in contrast to the microorganisms. The Public Synthetic Research center in Delhi was where the test microscopic organisms were gotten. Pure cultures of the test bacteria were aseptically added to test tubes containing sterile Muller Hinton broth before being incubated at 37°C for 18 hours. Test microbe stock societies were spotted onto sterile Muller-Hinton agar plates using a sterile q-tip. On immunized plates, sterile Whatman channel paper circles estimating 0.6 cm in measurement and containing standard anti-infection plates (Streptomycin, 11 mcg) and CUC (about 6 mg each) were set. The plates were brooded for 24 hours at 46°C. The zone of restraint was estimated utilizing a ruler after hatching. The analysis was done multiple times.

Antifungal activity of CUC

As test parasites, the genus Aspergillus includes both the fungi *Aspergillus niger* and *Aspergillus flavus*, as well as the fungus *Aspergillus oryzae*. Parasitic inoculums were prepared by adding spore suspension to a test tube of 0.86 percent sterile ordinary saline containing 0.02 percent Tween 90 cleanser. The antifungal activity of CUC (1 and 5%) was determined using the Toxin food procedure. On SDA plates harmed with the CUC by Point immunization, the test parasites were vaccinated. The plates were then brooded at room temperature for 72 hours. By estimating the state measurement on a harmed plate and contrasting it with settlement width on control plates, the effect of the test drug on contagious development was evaluated. The percentage of inhibition was calculated after the experiment was performed in triplicates.

Anthelmintic activity of CUC

Due to the adult Indian earthworm Pheretima pasthuma's anatomical and physiological similarities to the human intestinal roundworm parasite, it was picked for the anthelmintic examine of CUC. In typical saline (0.97%), different centralizations of the Standard medication (Piperazine citrate) and CUC were ready and filled the comparing marked petriplates (60 ml). Every one of the plates was loaded up with six worms that were almost a similar size. The time span it took for every individual worm to become incapacitated and pass on was noticed. At the point when the worms couldn't move in even typical saline, loss of motion was remembered to have happened. The worms were proclaimed dead when they lost their capacity to move, which was trailed by the blurring of their body colors 11. The worms were also dipped in slightly warm water to confirm their death. When all traces of movement had vanished, it was thought that the parasite had died.

Results and Discussion

Results are average of triplicates

Table 1 displays the antibacterial activity of CUC's results. Zones of inhibition around the well were either present or absent, depending on the results. It was determined that the inhibitory zone around the well was positive and that the absence of a zone was negative because it showed no bacterial growth. The CUC clearly exerted more control over Gram-positive bacteria than it did over Gram-negative bacteria. Finally, a common drug was found to be notably more effective against Gram-positive than Gram-negative bacteria. Out of the tested bacteria, those with a Gram positive phenotype were more severely inhibited than those with a Gram negative phenotype. These findings agree with earlier studies on Gram-positive bacteria. The cell wall's permeability barrier or the membrane accumulation mechanism may be to blame for Gram-negative bacteria's resistance. The presence of inhibitory components in CUC may be the cause of the test bacteria's inhibition (Figure 1).

The antifungal movement of CUC (1 and 5%) is displayed in Table 2. Test organisms' state measurement diminished on harmed plates, which might show antifungal movement. The CUC showed fixation subordinate hindrance of test organism's development. A. niger was viewed as more seriously affected than other tried parasites. The antifungal activity that has been observed may be caused by the presence of active constituents (Figure 2).

Both CUC and the gold standard medication showed significant dose-dependent anthelmintic activity, paralysing and killing worms. Worms were found to be paralyzed and killed more quickly with CUC concentrations of 1% and 5% than with a standard drug (Table 3). The presence of active constituents in CUC may be the primary cause of its anthelmintic activity (Figure 3).

Numerous powerful biological activities have been found in cow urine and its derivatives. It has been demonstrated that cow urine has antifungal activity by reducing the vegetative growth of test fungi. It has been examined what cow pee means for the germination of parasitic spores. Within the sight of cow pee distillate, a portion subordinate hindrance of test parasitic development and a diminishing in the level of test contagious spores that sprouted were noted. Tambekar and

Table 1. Antibiotic activity of CUC *in vitro*.

Bacteria test	Inhibition Zone of Streptomycin, Measured in Millimeters (10 mcg)	CUC (5 MG)
E. Coli	20	15
E. Aerogenes	20	17
B. Aubtilis	20	14
S. Aureus	18	14

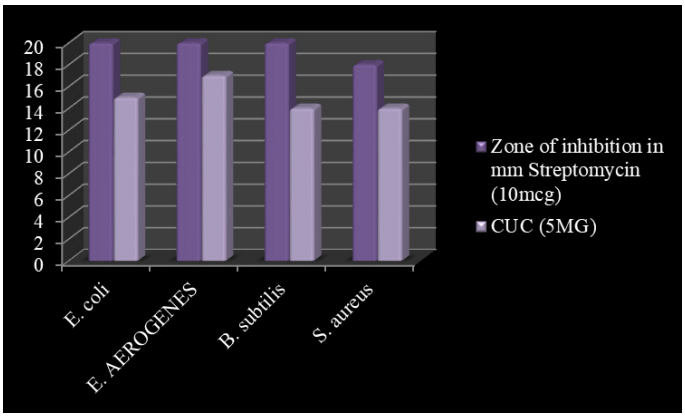

Figure 1. Antibiotic activity of CUC *in vitro*.

Table 2. Effective antifungal activity of CUC.

Fungi test	Reduction in activity by 1% CUC as a Percentage	(%) of test fungi 5% CUC
A. Niger	41.72	98.62
A. Flavus	35.82	71.41
A. Oryzae	19.36	92.35

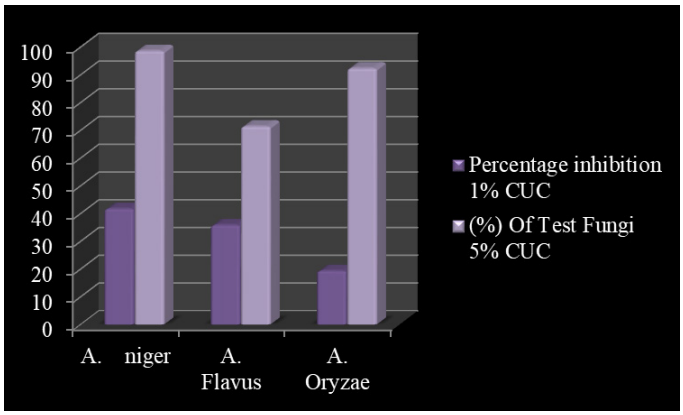

Figure 2. Effective antifungal activity of CUC.

Table 3. CUC's anthelmintic activity in test tubes.

Treatment	Concentration	Paralysis	Death Time
Control (Normal saline)	9.76	-	-
Standard	1%	63	86
	5%	72	64
CUC	1%	55	34
	5%	17	25

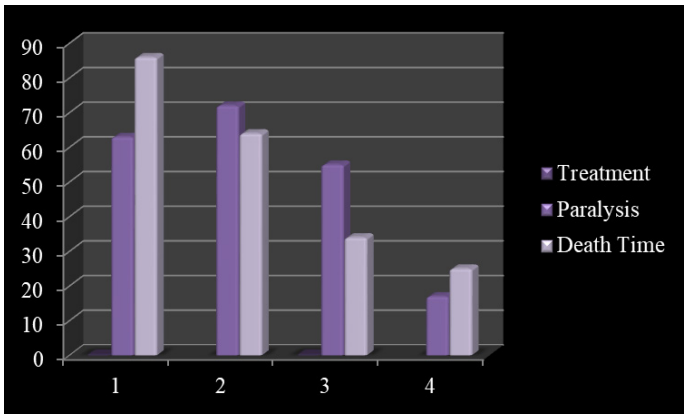

Figure 3. CUC's anthelmintic activity in test tubes.

Kerhalkar 16 synthesized the antimicrobial effect of cow pee and cow pee distillate. The outcomes showed that the movement of anti-microbials against the tried bacterial microorganisms was expanded by cow pee and cow pee distillate. When joined with anti-toxins, cow pee was a less successful bioenhancer than cow pee distillate. On the conidial germination of B. sorokiniana, the impacts of plant endlessly extricates joined with cow compost and cow pee were analyzed and the mix preliminaries were viewed as better than movement of simply separate 17. Cow manure and cow pee both separately and in mix were powerful at controlling the root-hitch nematode in tomatoes. Kamadhenu ark's hostile impacts against cadmium harmfulness in Mus musculus liver were examined. 1. Specialists took a gander at the hepatoprotective impacts of Panchagavya Ghrita against pale skinned person rodent liver harmfulness brought about *via* carbon tetrachloride. Cow pee distillate and redistillate's antigenotoxic and cell reinforcement properties were analyzed *in vitro*. The fertility rates of male mice exposed to cadmium chloride were analysed to determine the bioenhancing and neutralising effects of Kamdhenu Ark. As far as incapacitating and killing worms, the nematicidal movement of cow pee and cow pee distillate exhibited a portion subordinate action.

Conclusion

The ancient texts "Sushrita Samhita" and "Ashtanga Sangraha" mention cow urine as the most potent substance/emission of creature origin with endless remedial advantages due to its unique antibiotic property. It is considered the water of life, or Amrita, the nectar of God." When the cow urine is completely distilled, CUC is the residue that is left behind. In this study, a prominent antibacterial, antifungal and anthelmintic movement of CUC was noted. The presence of dynamic constituents in CUC might be the essential driver of its inhibitory movement. The CUC could be utilized to treat conditions welcomed on by crafty organisms, parasitic helminthes and pathogenic microorganisms. To help the capability of CUC as an antimicrobial and anthelmintic specialist, extra exploration on the detachment of dynamic constituents and *in vivo* tries should be led.

Acknowledgement

None.

Conflict of Interest

No conflict of interest.

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