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Evaluation of antimicrobial activity of indigenous cow urine against bacterial fish pathogens

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Abstract
From the ancient period cow's urine has been used as a medicine. In India, drinking of cow urine has been practiced for thousands of years. To overcome from such situation plants and animal materials are widely used for the treating various substances due to antimicrobial properties in aquaculture. In Aquaculture, cow urine has been used to improve general health of an individual. Therefore, the present study is under taken to study invitro antibacterial potential of cow urine against fish pathogenic bacteria, like, (*Aeromonas hydrophila, Escherishia coli, Bacillus cereus, Pseudomonas aeruginosa* and *Staphylicoccus aerus*) the method employed to study the different concentration of cow urine (25%, 50%, 75% and 100%, control used as distilled water) . MIC was also done to know the minimum inhibitory concentration of cow urine by using U.V. Spectrophotometer. The MIC observed at 100% concentration of cow urine against 5 hour OD value in Bacillus cereus (0.264) followed by P. aeruginosa (1.343), E. coli (1.180), S. aerues (0.776), A. hydrophila (0.740).The present study suggested that, cow urine have great potential as antimicrobial agents against selected fish pathogens and they can be used as an alternative medicine in the treatment or control of fish bacterial infections. From the result it is clear that fresh cow urine has shown very high susceptibility to all bacterial strains at a very low concentration. In the bioassays fresh cow urine exhibited a higher degree of antimicrobial activity in comparison to fresh cow urine and antibiotics. These results indicate that the cow urine has antimicrobial activities, which supports the claim of traditional practionerss.

Keywords: Cow urine, fish pathogens, antibacterial activity

1. Introduction
Among the fish producing countries, India is 4th in terms of total production and 2nd in terms of inland fish production globally, providing 4.5% of the total world fish production. Carps from the mainstay of culture fishery sector of India. India major carps viz *Catla catla (catla), Labeo rohita (rohu) and Cirrhinus mrigala (mrigal)* contributed to a major share of the total aquaculture production in India (Ayyappan and Jenna 2003). The increase in antibiotic resistant bacteria is largely due to the widespread use of antibiotics in medicine, in animal care, and in agriculture. The problem is compounded by the lack of new antibiotics to attack bacteria in different ways to circumvent the resistant genes. Decreasing efficiency and resistance of pathogen to antimicrobial drugs made the search of new antimicrobial agent an important strategy for the establishment of alternative therapies in difficult handling infections. (Maji S. *et al.*) [5] in veda cow's urine was compared to the nector (Rig veda). Cow's urine is known to cause weight loss and reverse certain cardiac and kidney problems, indigestion, stomach ache, edema ring worm, itching, Psoriaisis, gynae and such disease etc. (K. Krushnnamurthi *et al.* 2004) [5]. Cow urine has amazing germicidal power to kill varities of germs. All germs generated disease are thus destroyed cow urine correct functioning of liver cow urine contain many minerals especially copper, salt,etc. The various product of cow urine were used in medicine from ancient period cow urine has disinfectant antiseptic and it was also found antimicrobial, antiniotics, and antimicrobiala activity (Shivkumar D. singh *et al.* 2013) [5].
Another part of the problem is due to increasing use and misuse of exting antibiotics in human and veterinary medicine and also in agriculture. Now a days about 70% the bacteria that cause infection are resistant to at least of the drug which most commonly used for the treatment cow urine control the bacterial disease the purpose of this study was to determine antibacterial activity. (K. Rajapandiyan, is S. Shanthi *et al.* 2011).cow urine has certain volatile and non-volatile components which might have high antimicrobial activity. (Shaw *et al.* 2007). Our study was aimed at studying the antibacterial activity of cow urine against the given five pathogenic bacterial strains *Staphylococcus aureus, Escherchia coli, Pseudomonas aeurignosa, Bacillus cereus, and Aeromonas hydrophila.*

2. Materials and Methods
I) Collection of cow urine
Six healthy free cows of Bos indicus (Gir Indigenous breed) study for urine collection.For collection adult dewellers having age of more than 4 years were selected. The urine from Gir breed numbered 0133,0177,0184,0201 and 0468 collected from Goshala, Sri Vittal Rukmini Samasthan, Govindhapuram, kumbakonam, Tamilnadu, India. Where, the all-breed were maintained in a well-ventilated shed with the provision of individual feeding and watering. The urine was pooled, separately and transported to laboratory in air tight sterile container.

II) Bacterial Culture
Culture of five fish pathogene strain of each of Escerichia coli, Aeromonas hydrophila, Bacillus cereus, Pseudomonas aeurignosa, Staphylococcus aureus were maintained in the laboratory in Nutrient broth (NB, Himedia) stored at 37ºc for before used in experiments.

III) Antibacterial Activity
Determination of minimum inhibitory concentration (MIC)
Minimum Inhibitory Concentation (MIC) is the lowest concentration of an antimicrobial that inhibits or kills the visible

growth of microorganisms. MIC Is generally regarded as the most basic laboratory measurement of the activity of an antimicrobial agent against microorganisms. Four different concentrations i.e. 25%, 50%, 75%, and 100% of cow urine were prepared by diluting with distilled water. The nutrient broth was prepared. From this broth 4ml broth was added in each of four test tubes labeled as 25%, 50%, 75%, and 100% cow urine concentrations. Five sets of four test tube containing 4ml nutrient broth were prepared for five test microorganisms then 1ml, 0.75ml, 0.5ml, 0.25ml of each concentrations of cow urine was added in to the respective test tubes. After this step 1 ml test pathogen suspension were inoculated into respective labeled test tube. After inoculation, the test tubes were kept in a Bacterial culture for overnight at 37ºc and results in the form of turbidity O.D. were observed five hours interval at 600nm on U.V. Spectrophotometer.

3. Results and Discussion

Cow urine are valuable and readily available resources for primary health care and complementary health care system, undoubtedly cow urine containing substances of medicinal value that have yet to be, discovered, though large number Indian breed cow urine are constantly being screened for their antimicrobial effect, these cow urine may prove to be a rich source of compounds with possible antimicrobial activities. MIC was also done to know the minimum inhibitory concentration of cow urine by using U.V. Spectrophotometer. The fresh cow urine was subjected to get the MIC against selected fish pathogens. The MIC observed at 100% concentration of cow urine against 5 hour OD value in Bacillus cereus (0.264) followed by P. aeruginosa (1.343), E. coli (1.180), S. aerues (0.776), A. hydrophila (0.740). The present study suggested that, cow urine have great potential as antimicrobial agents against selected fish pathogens and they can be used as an alternative medicine in the treatment or control of fish bacterial infections. From the result it is clear that fresh cow urine has shown very high susceptibility to all bacterial strains at a very low concentration. In the bioassays fresh cow urine exhibited a higher degree of antimicrobial activity in comparison to fresh cow urine and antibiotics. Least MIC value that is Bacillus cereus (0.264). Therefore, these cow urine could be seen as a good source for useful drugs.

Table 1: Representing the optical density value of 5 samples of in which fresh cow urine was inoculated and the O.D was taken after every 1 hr. The declines in the O.D values indicate that the cow urine is showing its antimicrobial activity

Bacteria	1hour	2hour	3hour	4hour	5hour
Pseudomonas aeurignosa					
Ampicillin	0.891	0.751	0.685	0.515	0.432
25%	2.149	2.215	2.175	1.985	1.780
50%	2.496	2.021	1.954	1.722	1.552
75%	2.246	1.983	1.854	1.632	1.427
100%	2.496	1.837	1.730	1.692	1.343
Escherichia coli					
Ampicillin	0.853	0.715	0.690	0.622	0.513
25%	1.769	1.742	1.698	1.532	1.422
50%	1.672	1.673	1.586	1.492	1.401
75%	1.837	1.571	1.430	1.327	1.297
100%	1.882	1.430	1.372	1.229	1.180
Bacillus cereus					
Ampicillin	0.550	0.500	0.475	0.432	0.375
25%	0.697	0.727	0.625	0.522	0.515
50%	0.782	0.715	0.691	0.593	0.500
75%	0.743	0.680	0.587	0.493	0.401
100%	0.791	0.530	0.427	0.380	0.264
Staphylo coccus					
Ampicillin	1.454	1.250	1.102	0.987	0.951
25%	1.405	1.607	1.522	1.401	1.307
50%	1.496	1.422	1.315	1.272	1.112
75%	1.959	1.272	1.150	0.987	0.915
100%	1.505	1.100	0.957	0.857	0.776
Aeromonas hydrophila					
Ampicillin	1.505	1.422	1.380	1.172	1.023
25%	1.033	1.308	1.152	0.992	0.832
50%	1.441	0.985	0.832	0.782	0.691
75%	1.235	0.954	0.402	0.742	0.740
100%	0.749	0.615	0.585	0.487	0.487

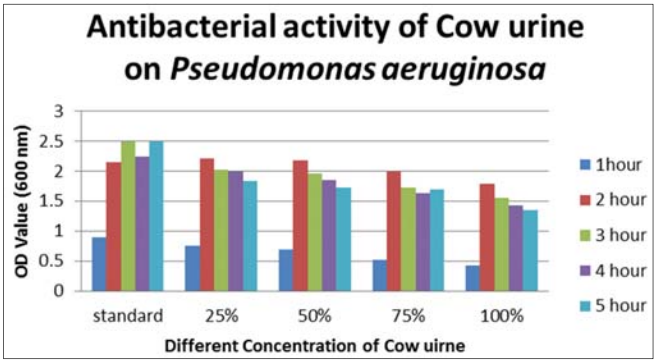
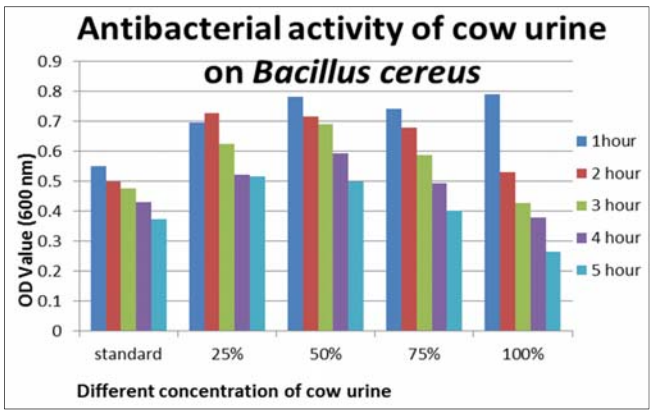


Fig 1



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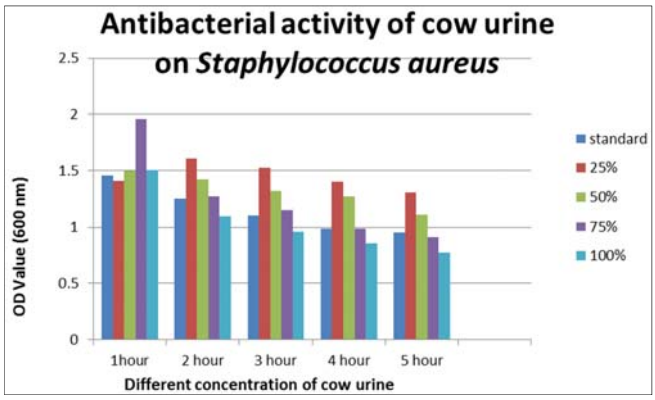

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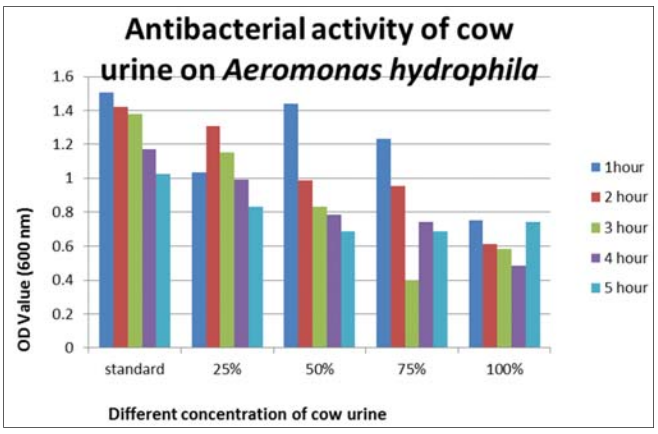

Fig 4

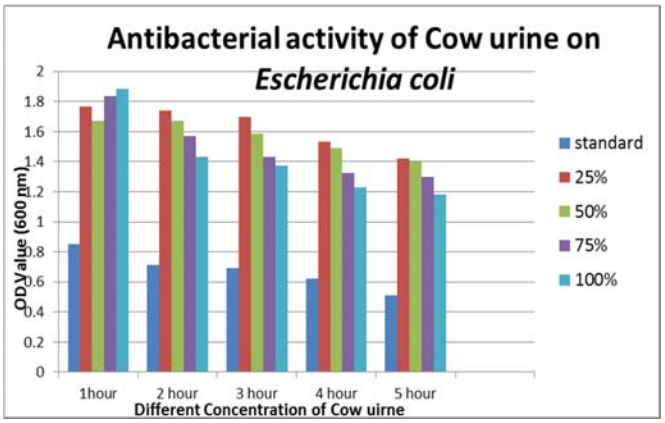

Fig 5

4. Reference

1. Ayyappan S, Jenna JK. Sustainable freshwater aquaculture in India. In: sustainable Indian fisheries 88-131. National academy of agricultural sciences, New Delhi, 2001.
2. Arun Kumar Sathasivam M, Methuselah, Rajasekaran, Rajendran. Antimicrobial Activities of cow urine Distillate against some clinical pathogens. Global. J. of pharmacology. 2010; 4(1):41-44.
3. Edwin J, Sheej E, Vaibhav T, Rajesh G, Emmanuel T. Antioxidant and antimicrobial activities of cow urine. Global journal of pharmacology. 2008; 2(2):20-22.
4. krishnamurthi K, Dutta D, Devi SS, Chakrabarti T. protective effect of distillate and redistillate of cow's urine in human polymorph nuclear leucocytes challenged with established genotoxic chemicals. Biomes environ Sci. 2004; 17:57-66.
5. Maji S, Dandapat P, Ojha D, Maity C, Halder SK, Das *et al.* In Vitro Antimicrobial potentialities of different solvents extracts of ethno medicinal plants against clinically isolated human pathogens. Journal of Phytology. 2010; 2(4):57-664.
6. Pathak ML, Kumar A. Cow praising and importance of panchgavya as medicine; Sachitra Ayurveda, 2003; 5:56-59.
7. Shivkumar D *et al.* Effect of freeze dired cow urine of different Indian cow breeds in tertiary combinations with plant product on the reproduction and certain biochemical parameter in the ovotestis of lymnaea acuminate. Applied science reports, 2013; 1(2):40-49.
8. Shah CP, Patel DM, Dhami PD, Kakadia J, Bhavsar D, Vachhani UD, *et al.* In vitro screening of antibacterial activity of cow urine against pathogenic human bacterial strains; International. Journal of Current Pharmaceutical Research. 2011; 3(2):91-92.
9. Subha ganguly *et al.* Role of plant extract and cow urine distillate as immunomodulators an eview. Journal of medicinal plants research. 2011; 5(4):1996-0875, 649-651.