I. INTRODUCTION

Cows were regarded as wealth and were the backbone of the economy of ancient Indians. Wars were fought for acquiring cows. Cattle were one of the most frequently used animals described in Vedas. Cows were regarded as mother ("Gau-mata") and referred to as Aghnya. Prayers were offered to Agni (God of Fire) to kill with his flame all those evil dwellers, who stole milk of cows. Voluminous treatises are also available on cows, e.g., Gau Ayurveda'. During Pauranik period, cow (Kamadhenu) emerging out of Samudra manthan, was considered so valuable that devatas fought with demons and acquired them.

Cattle husbandry was well developed during the Rigvedic period (1500–1000 BC) and the cow (Kamadhenu) was adored and considered the ‘best wealth’ of mankind. Aryans laid great emphasis on protection of cows. Atharvaveda provides interesting information about ailments of animals, herbal medicines, and cure of diseases. Urine was also considered as an antidote to poisons (Sushrut Samhita).

From the ancient period, cow's urine has been used as a medicine. In Veda, cow's urine was compared to the nectar. In Sushrut, several medicinal properties of cow's urine have been mentioned and cow urine was known to cause weight loss and to cure leprosy, cardiac and kidney problems, indigestion, stomach ache, edema, etc. (Kaviratna and Sharma., 1996).

This kind of alternative treatment, termed as ‘panchgavya therapy’ or ‘cowpathy’, has been reported to be beneficial even for dreaded diseases like cancer, AIDS and diabetes. Practitioners of Ayurvedic medicine from India routinely use cow urine as a remedy and the medicines made from it are used to cure several diseases.
"Kamadugha Yojane" has been drawn up to protect Indian cows in appreciation of the multifarious uses of "Panchagavya," which comprises cow dung, urine, ghee, curd and milk, which is found to be effective in treating major diseases such as cancer and diabetes. The fact that cow urine costs more than milk speaks of its limitless medicinal use (Raghaveshwara Bharati Swamiji, 2006).

The cow urine has been given two US patents for its bio-enhancer properties specially for early cure of tuberculosis and cancer in human beings. United States Patent and Trade mark Office had granted Patents No 6410059 and No. 6896907 to an “Indian innovation which has proved that cow urine can make antibiotics, anti-fungal agents and also anti-cancer drugs more effective”. Other studies also revealed the immunomodulatory properties of cow urine. Besides, cow urine is said to be a very effective insect repellent when mixed with certain herbs (Nair, 2002).

There are numerous uses of cow urine for various human ailments like, cancer, osteoarthritis, allergies, kidney failures, skin diseases, healing of wounds, etc. If we consider all these things in a positive way, we find that the cows are comparatively much more useful than any other milch animal, as they not only provide the milk but also protect our health, through cowpathy and sustain the agriculture through dung manure and bullock power.

Need of hour is another revolution; through extensive research in cowpathy for its scientific validation and a wider popularity. Many institutes and NGOs are working on different products of cowpathy and have obtained very encouraging results.

Visualizing the potential use of cow urine in several ailments including even cancer, the use of Gomutra (cow urine) and its scientific therapeutical validation is required for its worldwide acceptance and popularity.
Samples of the "Cow's Urine Mixture" (a traditional remedy for convulsions) administered intraperitonially to fasting grey rabbits were found to produce significant depression of their plasma glucose. A similar effect on the plasma glucose was produced by a sample of Cow's Urine Mixture given by the nasogastric route. These findings confirm that the mixture has a significant hypoglycemic effect when given both parenterally and orally, the latter being the usual mode of administration of this concoction. The probable nature of the hypoglycemic agents contained in the mixture has been documented (Grange, 1981).

The redistillate of cow's urine was found to possess total antioxidant status of around 2.6 m mol, contributed mainly by volatile fatty acids (1500 mg/L) as revealed by the GC-MS studies. These fatty acids and other antioxidants might cause the observed protective effects (Krishnamurthi et al., 2004).

Cow's urine concoction is a traditional preparation commonly administered to convulsing children by the Yoruba-speaking people of Nigeria. Its use is, however, often complicated by severe poisoning (Ayorinde et al., 1982).

Olusi and Ojewole (1978) revealed that oral administration of cow's urine concoction in rats causes the activation of the third complement component in the serum. The product of this activation has some histamine-releasing effects and causes a characteristic acute fall in neutrophil and monocyte counts in the peripheral blood which is reversed within four hours.

However, poisoning in children resulting from consumption of cow urine concoction has been reported. Further, the toxicity was also experimentally confirmed in mice (Oyebola and Elegbe, 1975).

The detailed studies on pharmacological activities and safety evaluation of cow urine employing controlled studies in experimental animals are scanty.
The present research investigates the pharmacological activities and safety evaluation of freshly voided cow urine with the aim of providing scientific basis for use of cow urine in various disease conditions.

Hence, the present investigation was undertaken on cow urine in male and female rats with the following objectives,

1. To study certain pharmacological activities.
2. To study the effect on the immune system.
3. To study the safety of cow urine with sub-acute and sub-chronic administration for 28 days and 90 days respectively.
4. Comparative physical, chemical and microscopic characteristics of urine from different breeds of cattle.