Int J Pharm Bio Sci 2014 Oct; 5(4): (P) 496 - 500

Research Article **Pharmacology**

International Journal of Pharma and Bio Sciences **ISSN 0975-6299**

EFFECT OF COW URINE ON LIVER MICROSOMAL ENZYMES IN RATS

R. RASHMI*, JAGADEESH, S. SANGANAL AND N.B. SHRIDHAR

Department of Veterinary Pharmacology and Toxicology, Veterinary College, KVAFSU, Hebbal, Bangalore, India.

ABSTRACT

Deoni cow urine was evaluated for its effect on pentobarbitone induced sleeping time in wistar rats. Five groups with ten males and ten females were separately administered with distilled water (control), Chloramphenicol 100 mg/kg i.p, Phenobarbitone sodium 80 mg/kg i.p, cow urine 0.25 ml/kg p.o, cow urine 0.5 ml/kg p.o for seven days. After 30 min of last dose treatment pentobarbitone sodium 35 mg/kg i.p was administered to all groups except group III and sleeping time was recorded. After 24 h of last dose treatment pentobarbitone sodium 35 mg/kg i.p was administered to group III and sleeping time was recorded. The pentobarbitone sleeping time significantly increased in treated (Group II, IV and V) compared to their respective control group. This can be attributed to the inhibitory effect of cow urine on liver microsomal enzymes. Length of sleeping time after pentobarbitone administration is inversely related to the rate of drug metabolism.

KEYWORDS: **Cow urine, Chloramphenicol, Phenobarbitone sodium, Pentobarbitone sodium, sleeping time**

R. RASHMI
Department of Veterinary Pharmacology and Toxicology,
Veterinary College, KVAFSU, Hebbal, Bangalore, India.

INTRODUCTION

Cow is the backbone of Indian culture and rural economy and sustains our life, represent cattle wealth and bio-diversity. From the ancient period cow urine has been used as a medicine. Cow urine used for against bacterial/viral infections, rheumatoid arthritis, hepatitis, leprosy, ulcer, heart disease, asthma, skin infections, aging[1]. It also posses antitoxic, bioenhancing[2] and hepatoprotective activity[3]. Bioenhancer activity has been found to reduce the antibiotic dose per day and duration of treatment[4]. Thus, it can promote and augment the bioactivity or bioavailability or the uptake of drugs in combination therapy and reduce the dose and duration of treatment. Bioenhancing property highlight the beneficial role of cow urine in treating bacterial infections and cancers and also cow urine enhances the efficacy and potency of therapeutic drugs[5]. Deoni is an indigenous cattle breed developed from a strain descended from the mixture of Gir, Dangi and local cattle.No appreciable data were available on the effect of cow urine on liver microsomal enzymes. Henceforth, the present study was undertaken to evaluate the effect of Deoni cow urine on liver microsomal enzymes in rats.

MATERIALS AND METHODS

Deoni cow urine was collected from Deoni Conservation Unit, NDRI, Bangalore. Mid stream urine was collected in a sterile glass container. Collected urine was stored in the refrigerator at 4^0C until used for the experiment. Wistar rats were procured from Indian Institute of Sciences, Bangalore. They were housed in standard polypropylene cages and allowed for acclimatization to the experimental conditions for one week. They were maintained under standard laboratory hygienic conditions, providing standard laboratory animal feed and water *ad libitum*. The approval of the institutional Animal Ethics Committee was obtained prior to start of the experiment[6]. Healthy young male and female rats which were nulliparous and non- pregnant with a body weight ranging from 150-200g were assigned to one control group, two reference group and two treatment groups. Each group consisting of 10 males and 10 females. The experiment was carried out following the method described by Turner (1965)[7]. Group I served as control (Distilled water). Chloramphenicol sodium succinate administered by i.p at the dose of 100 mg/kg to Group II. Phenobarbitone sodium administered by i.p at the dose of 80 mg/kg to Group III. Cow urine administered at the dose of 0.25 ml/kg and 0.5 ml/kg body weight to Group IV and Group V respectively. Dosing was done to control and treatment groups once daily. Cow urine doses were selected corresponding to 15ml and 30 ml per day in a human being weighing around 60 kg. It comes to 0.25 ml/kg and 0.5 ml/kg body weight respectively. After 30 min of last dose treatment on the 7^{th} day, pentobarbitone sodium 35 mg/kg was administered i.p to all groups except group III. The time elapsed between loss and recovery of the righting reflex was noted and taken as sleeping time. The rat was considered as being awake if it could right itself (return to upright position). Once a rat righted itself, it was placed on its back once again and allowed to right a second time for confirmation. Sleeping time as minute (min) was measured. After 24 h of last dose treatment pentobarbitone sodium 35 mg/kg i.p was administered to group III and sleeping time was recorded.

RESULTS

Sleeping time in group II and V male rats was significantly ($P<0.001$) increased than the control group value (Table 1 and Fig.1). Sleeping time in group IV male rats was significantly ($P<0.01$) increased than the control group value (Table 1 and Fig.1). Group III male rats did not show any significant ($P>0.05$) variation in the sleeping time compared to control group (Table 1 and Fig.1).

Table1

Effect of treatment groups on Pentobarbital sleeping time in male rats

GROUPS	SLEEPING TIME (min)
Group I (Control)	57.20±3.41
Group II (Chloramphenicol 100 mg/kg)	328.80±22.29 ***
Group III (Phenobarbitone 80 mg/kg)	13.60±1.35
Group IV (Cow urine 0.25 ml/kg)	123.40±11.14 **
Group V (Cow urine 0.5 ml/kg)	147.80±12.23 ***

Values are Mean±SE, ** P<0.01, ***P<0.001, n=10

Table 2

Effect of treatment groups on Pentobarbital sleeping time in female rats

GROUPS	SLEEPING TIME (min)
Group I (Control)	55.20±3.55
Group II (Chloramphenicol 100 mg/kg)	312.80±18.86 ***
Group III (Phenobarbitone 80 mg/kg)	16.00±1.54
Group IV (Cow urine 0.25 ml/kg)	117.00±10.93 **
Group V (Cow urine 0.5 ml/kg)	139.80±11.77 ***

Values are Mean±SE, ** P<0.01, ***P<0.001, n=10

Figure 1

Effect of treatment groups on Pentobarbital sleeping time in male rats

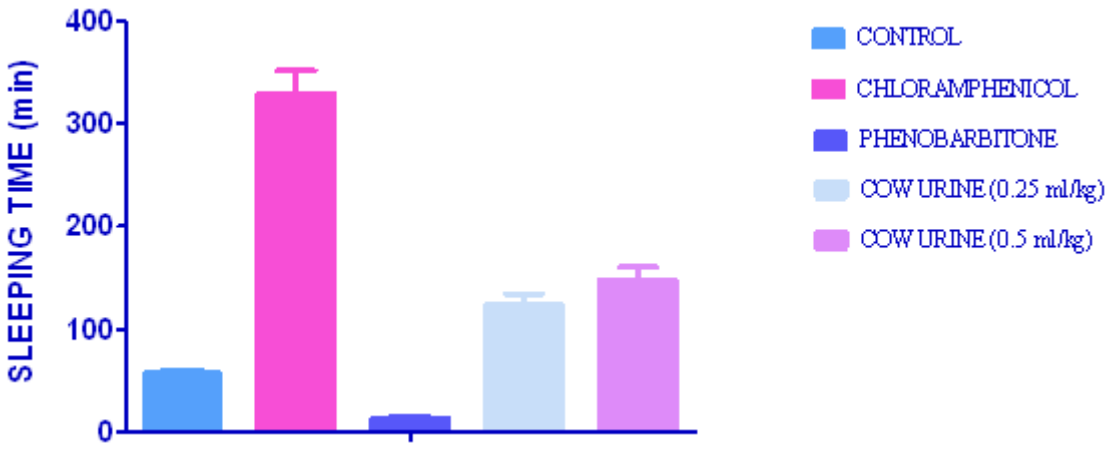
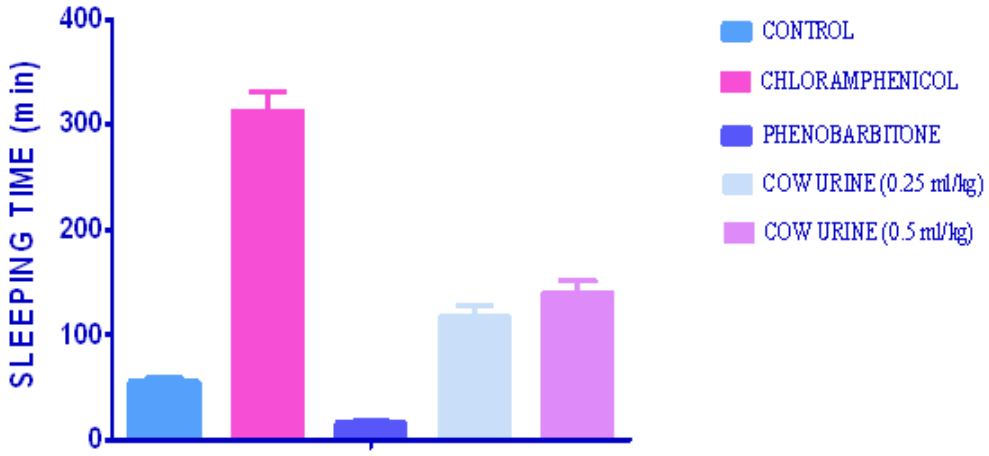


Figure 2
Effect of treatment groups on Pentobarbital sleeping time in female rats



Sleeping time in group II and V female rats was significantly (P<0.001) increased than the control group value (Table 1 and Fig.1). Sleeping time in group IV female rats was significantly (P<0.01) increased than the control group value (Table 1 and Fig.1). Group III female rats did not show any significant (P>0.05) variation in the sleeping time compared to control group (Table 2 and Fig.2).

DISCUSSION

Pentobarbitone is a short acting barbiturate metabolized by microsomal drug enzymes primarily in the liver. Barbiturate-induced anesthesia is a popular model of pharmacological or toxicological response, because it is a non-destructive measure of liver function[8, 9]. Pentobarbital is the drug of choice for this procedure. Length of sleeping time after anesthesia is inversely related to the rate of drug metabolism. Pentobarbital sleeping time is an *in vivo* indicator of drug metabolism, which can be carried out on large numbers of animals over a short interval of time. Pentobarbitone sleeping time significantly increased in treated (Group II, IV and V) male and female rats compared to their respective control groups (Group I). This can be attributed to the inhibitory effect of cow urine on liver microsomal enzymes. Length of sleeping time after pentobarbitone administration is inversely related to the rate of drug metabolism. This was in accordance to the findings of brahmi gritha, a panchgavya ayurvedic formulation significantly potentiated pentobarbitone induced sleeping time in mice treated at the dose of 300, 500 mg/kg p.o[10].

CONCLUSION

In the present study, cow urine treated groups significantly potentiated pentobarbitone induced sleeping time. Chloramphenicol treated groups (reference control) significantly potentiated pentobarbitone induced sleeping time. Phenobarbitone treated groups (reference control) showed decrease in pentobarbitone induced sleeping time

ACKNOWLEDGEMENT

I avail deep sense of gratitude to late Prof. Dr. K, Jayakumar. His inspiration, advices, moral support and blessings helped me to grow in my professional competence. I acknowledge special thanks to Government of Karnataka for giving an opportunity to work in the project entitled “Pharmacological and Therapeutic evaluation of cattle urine in Karnataka. I owe special thanks to Advinus Therapeutics Limited, Bangalore for academic support.

REFERENCES

1. Kaviratna, and Sharma, Use of cow's urine in leprosy. Charak Samhita (Eng.), 2nd Edn, Sri Satguru Publications: pp 804-810, (1996).
2. Khan A and Vinoy K, Antitoxic and Bioenhancing role of *Kamdhenu ark* (Cow urine distillate) on fertilitty rate of male mice (*mus musculus*) affected by cadmium Chloride Toxicity. Int J Cow Sci, 1 (2): 184-187, (2005).
3. Achliya GS, Wadodkar SG, and Dorle, A, Effect of Bramhi Ghrita on carbon tetrachloride induced hepatic damage in rats. Ind J Pharma Sci, 66: 252-254, (2003).
4. Joshi MM, Cow therapy (Panchgavya) and cattle based economy. Inaugural speech in Vishva Ayurvedas Sammelan on 7.9.2002. IIT, New Delhi, (2002).
5. Dhama K, Chauhan RS, and Lokesh, S, Anti-cancer activity of cow urine: Current status and future directions. Int J Cow Sci, 1: 1-25, (2005a).
6. Swetha R, jayakumar K, Narayanaswamy M, Shridhar NB, Jagadeesh S and Suguna Rao, organ directed toxicity of Halquinol in a repeated dose 28 Dy oral toxicity study in female rats. Ind J Pharma, 39 (2): 97-102, (2007).
7. Turner RA, Screening methods in Pharmacology. Academic Press, New York, Vol I, pp 69-86, (1965).
8. Lovell DP, Variation in pentobarbitone sleeping time in mice. Strain and sex differences. Lab Ani, 20: 85-90, (1986 a).
9. Lovell DP, Variation in pentobarbitone sleeping time in mice. Variables affecting test results. Lab Ani, 20: 91-96, (1986 b).
10. Achliya GS, Wadodkar SG, and Avinash KD, Neuropharmacological actions of panchagavya formulation containing Emblica officinalis Gaerth and Glycyrrhiza glabra Linn in mice. Ind J Exp Biol, 42 (5): 499-503, (2004).