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Preliminary pharmacological investigations on camel urine (*Camelus dromedarius*)

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Abstract

Pharmacological effects of camel urine (CU), its protein precipitate (PP), diluted urine (DU) and chloroformic extract (CE) were investigated. The PP inhibited the spontaneous movements of the isolated rat duodenum at a dose rate of 0.1ml/bath. Diluted female camel urine (0.4 ml/bath) or its protein precipitate (0.8 ml/bath) on rat fundus and rabbit jejunum revealed serotonin like effect which was antagonized by serotonin blocker cypohyptadine (0.2 ml /bath). In addition crude female camel urine produced transient relaxation on rabbit jejunum followed by increased contraction on first washing. chloroformic extract produced no effect on rat duodenum, fundus and rabbit jejunum, whereas rabbit and chick rectum showed slight changes in the frequency and amplitude contractions.

Key words: Pharmacological, Investigation, Camel, Urine

Introduction

Arabian camel urine was standard prescription in Arab medicine and remains stable for Bedouin natural remedies to this day, both as diuretic snuff and delousing hair detergent (Mona, 1989; Kabariti, 1988). The percentage of use of camel urine among five nomadic tribes in eastern Sudan were as follows: 72% use camel urine for internal problems in general, while 52%, 32%, 20% and 32% used it for malaria, ascitis, dental problems and hair shampoo respectively. Regarding the sex of the animal, 88% use female urine whereas only 12% use male urine. Seventy two percent drink it as pure urine, whereas twenty eight percent mix it with milk (Ohaj, 1993, 1998). Therapeutic uses of animal's urine have a long history as that of human.

Most of the earlier and current studies deal with pharmacological and therapeutic effects of human urine (Bersnyski, 1986; Kabariti, 1988; Kroon, 1996; Martha, 2000; Natalie, 2002). No detailed studies were done on the pharmacology and/or the possible mechanism(s) of action of animals urine, especially the dromedary. Regarding the positive results obtained from the experimental studies (antibacterial, antifungal, anticarcinogenic, antiparasitic and hepatoprotective), as reported by Ohaj, 1998; Wisal, 2002; Mona, 2003 and Salwa, 2005 respectively, necessitate its pharmacological investigations. In this study the pharmacological effect of female camel urine (different extracts) were performed utilizing laboratory animals isolated strips.

Materials and Methods

Camel urine was collected from naturally grazing animals (normal urination/or by tashweel technique). Physiological saline solutions (Tyroid's & Kerb's) were prepared according to the method of Kitchen (1984), CE, PP of she-camel urine: native protein precipitate was performed by salt saturation using ammonium sulphate (40%) w/v and DU was obtained by adding distilled water to the urine in ratio 3:1. Bioassay of isolated tissues was prepared according to the method described by Kitchen (1984). Using duodenum and fundus strips from a Wister albino rats, jejunum and rectum strips from local rabbits and rectum strips from 15 day old chicks.

Results

A dose of 0.1 ml/bath of camel urine PP abolished the spontaneous contractions of rat duodenum as shown in Fig. (1). Female CU and PP at a dose rate of 0.4 and 0.8 ml/bath, respectively however, stimulated the rat fundus and rabbit jejunum as shown in Fig. 2 and 3. The stimulant effects were blocked by cyproheptadine and atropine at a dose of 0.2 and 0.25ml/bath, respectively.

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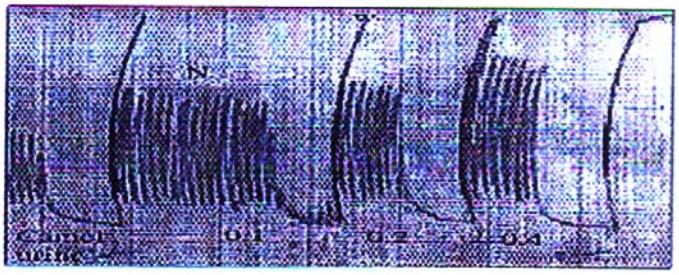

Fig. (1):

Effect of camel urine (protein precipitant) on rat duodenum

N: normal tissue contraction

W: wash

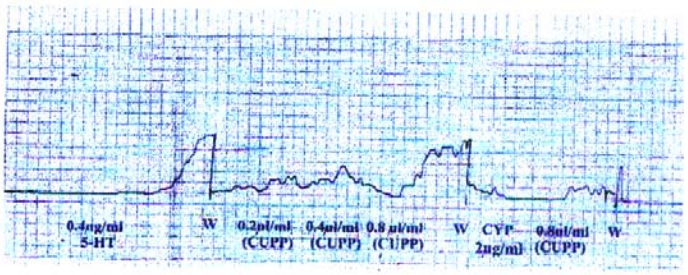

Fig. (2):

Effect of camel urine protein precipitant (PP) at dose rate 0.8ul /bath similar to the effect of 5-HT stimulant 0.4ng/bath .The stimulant was blocked by 0.2ng/bath.

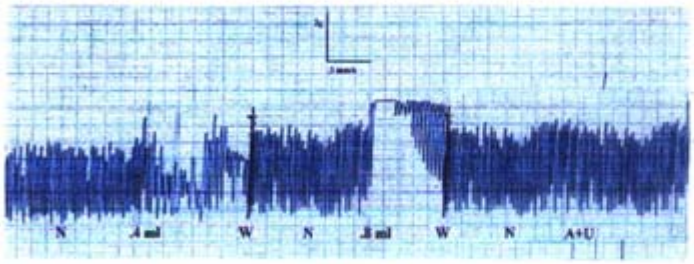

Fig.(3):

Effet of diluted camel urine in adose of .8 ml / ml on isolated rabbit jejunum , the urine produced stimulant effect which was blocked by atropine (A,25 ng /ml)

N:normal , W: wash

A:atropine , U: urine .

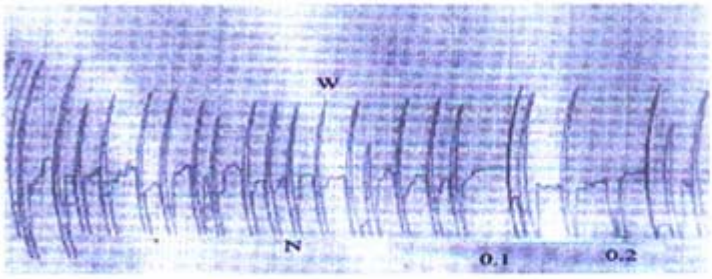

Fig. (4):

Effect of camel urine (protein precipitant) on rabbit rectum

Table1: Represent the effect of different forms of camel urine on isolated strips. No: No effect, Re: relaxant effect, ST: stimulant effect, SC: slight change.

Treatments and tissue strips	Camel Urine	Protein Precipitate	Diluted Urine	Chlorofomic Extract
Rat duodenum	No	Re	No	No
Rat fundus	No	ST	ST	No
Rabbit jejunum	Re	ST	ST	No
Rabbit rectum	No	No	No	SC
Chick rectum	No	No	No	SC

CU at 0.1 ml/bath completely abolished the spontaneous contractions of rabbit jejunum. However, the inhibitory effect was followed by transient contraction on first washing. The CE showed slight effect on rabbit and chick rectum strips Fig.4.

Discussion

This study showed that the inherited knowledge of traditional usage of camel urine for treating various ailments in Sudan could be a guide for the discovery of important biological activities which might be of useful therapeutic effects. Moreover, the scientific evaluation and identification of the mechanism (s) of action of camel urine is important for justification of its employment in modern medicine, in view of its wide uses in different parts of Sudan and other Arab countries. The results of the present study demonstrate important biological activities of the CU, PP, CE and DU. DU and CU exerted dual effects on the rabbit jejunum isolated strips. DU stimulated the organ while CU abolished the spontaneous rhythmicity of the same organ. Similar findings were reported by Rodenburg (1937) using human urine. The stimulant effect appeared to be mediated via muscarinic receptors stimulation as the effect was blocked by atropine sulphate (0.25 ml/bath). This is in agreement with Vicher (1983) and Ali et al. (1991) findings using extracts of medicinal plants. The addition of PP directly stimulated rabbit jejunum at 0.8 µl/bath the effect was blocked by atropine sulphate (0.2 ml/bath) which suggests acetylcholine-like action. Rat fundus was markedly stimulated with PP and DU as did serotonin. The abolishment of the stimulant effects of both urine forms and 5-Hydroxytryptamine (5-HT) by the addition of the non-selective serotonin blocker, cyproheptadine, demonstrated the 5-HT like activity of PP and DU. This high sensitivity might be due to the fact that rat fundus was found to be enriched with the 5-HT2B receptors (Vane, 1957). This has been recently verified as subtype of the 5-HT2 receptor family by Cox et al. (1996). The addition of PP to rat duodenum directly inhibited the myogenic contractions, which may suggest a direct musclotropic relaxation of smooth muscles. Similar findings were reported by Guddum (1955) and Horton (1959) using human urine. CE produced slight changes on rabbit and chick rectum rhythm city, however, no effects were observed on other strips. It can concluded that camel urine (indifferent forms) can penetrate subepithelially and induce generation of mast cells with release of chemical mediators, followed by forceful peristaltic contractions caused by 5-HT and other newly formed mediators.

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