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EFFECT OF AQUEOUS LEAF EXTRACT OF ZIZYPHUS MAURITIANA ON ANIMAL INTESTINAL MOTILITY

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ABSTRACT

The leaves of *Zizyphus mauritiana*, known locally as *sidr*, has been used traditionally for treatment of diarrhoea. The aqueous extract of the leaf was investigated for its effect on intestinal motility using activated charcoal meal test and castor oil-induced diarrhoea in mice, and isolated rabbit intestine in organ bath. *Zizyphus mauritiana* leaf extract reduced the distance traveled by activated charcoal by 35.7% compared to control. The extract (0.25 and 0.5 ml) also delayed the appearance of castor oil drops by 52.5% and 110.4% compared to control respectively. The pattern of contraction of isolated rabbit intestine is a tonic one; probably more towards morphine-like than atropine-like effect. It is concluded that the aqueous leaf extract of *Zizyphus mauritiana* inhibits intestinal motility probably by inducing a tonic contraction of intestinal smooth muscles.

INTRODUCTION

The interest in traditional medicine is increasing at the present time^[1]. Herbal medicine is a part of this kind of medicine for which the World Health Organization (WHO) has issued a number of publications^[2-4]. Among them one which deals with the available experimental and clinical evidence for the effectiveness of several herbs in treatment of diseases^[4]. A variety of plants have been used traditionally in the treatment of diarrhoea^[5-9]. The leaves of *Zizyphus mauritiana*, known locally as *sidr*, is being used by our local population in the treatment of diarrhea. This and related plants have been reported, in our folk medicine, to be constipating agents, useful in gastric troubles, and as tonic and soothing agents^[10]. The present study is intended to investigate the potential antidiarrhoeal effect of the aqueous leaf extract on intestinal motility in mice, measured by charcoal meal test and castor oil-induced diarrhoea. The effect of the extract on intestinal propulsive movement was also studied on isolated rabbit intestine.

MATERIALS AND METHODS

Extract

0.9 gm of fresh green leaves of *Zizyphus mauritiana* was boiled for 5 minutes in 100 ml of boiling distilled water (in a similar way to that prepared for traditional use).

Animals

Mice, weighing 20-25 gm, fasted for 24 hours, and drinking water freely, were used in this experiment. The intestinal transit time was

measured by two methods; the charcoal meal test^[11] and castor oil-induced diarrhoea^[12].

Charcoal meal test

Activated charcoal meal was prepared by dissolving 8 gm of activated charcoal (BDH, UK) in 100ml distilled water. Fifteen minutes after oral administration of 0.5ml of 0.9% of freshly prepared extract, 0.5ml of activated charcoal was administered. The animals were, then, sacrificed 20 minutes later by cervical dislocation and the intestine was removed quickly from the pylorus to the ileocecal junction. The total length of the intestine and the distance traveled by the activated charcoal was measured. The distance the meal had traveled from the pylorus to cecum (in centimeters) was measured and calculated as a percentage of the total length of the intestine.

Castor oil-induced diarrhoea

0.1 ml of commercially available castor oil was administered orally to each animal in the control and experimental groups. Intestinal motility was measured as the time (in minutes) after the administration of castor oil till the anal passage of first drop of oil as detected by a filter paper. Castor oil was given 15 minutes after the administration of the aqueous leaf extract (in doses of 0.125, 0.25 and 0.5 ml) or distilled water (control group).

Isolated rabbit intestine

A piece of rabbit jejunum, 3-4cm long, was deducted and mounted in Tyrode's solution^[12].