

DEPRESSANT ACTION OF AVERRHOA CARAMBOLA

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INTRODUCTION

PREPARATIONS of *Averrhoa carambola* (star fruit) have been used in an attempt to treat ailments of several different types both by bomohs (the Malay medicine men) and by traditional Chinese herbalists. Among these ailments for which star fruit preparations have been 'prescribed' are headache, vomiting, coughing and restlessness (Burkhill, 1935 : Woei, 1970). This paper describes an attempt to determine whether star fruit contains any pharmacologically active depressant agent.

MATERIALS AND METHODS

Twenty ripe star fruits, total wet weight 3 kg, were homogenized for 20 minutes. After the aqueous insoluble residues were removed, saturated lead acetate solution was added to the filtrate to precipitate tannins. Saturated ammonium sulphate was next added to the clear solution which was warmed to coagulate proteins and precipitate excess lead as lead sulphate. After filtration, the aqueous solution was evaporated to dryness under high vacuum. The residues were extracted with methanol and then filtered. This methanol extract was distilled to dryness under partial vacuum, leaving a syrupy liquid (SFX) which weighed 145 g. Appropriate dilutions of SFX with normal saline were prepared for pharmacological testing.

SFX was administered intraperitoneally (IP) to male albino mice weighing 28 - 35 g.

The effect of SFX on barbiturate-induced sleeping time was determined according to the method of Winter (1948). SFX or saline control was administered IP 15 minutes before 35 mg/kg

pentobarbitone sodium IP. The duration of loss of righting reflex (sleeping time) was recorded.

Gross locomotor activity of groups of four mice was recorded using an Animex activity meter, type DSE. All experiments on activity were carried out between 7.45 a.m. and 10.00 a.m. Recordings began immediately after IP administration of SFX or saline control.

RESULTS

Gross Observations: At any dose, the extract of star fruit (SFX) never caused recoverable unconsciousness of mice. Doses above 8 g/kg caused convulsions followed one or two minutes later by death, the time between intraperitoneal (IP) administration and death being 10 - 15 minutes. Right up to death the animals remained conscious and, though displaying ataxia, were capable of movement. They also responded normally to painful stimuli such as pinching of the tail. Thus SFX did not produce anaesthesia or analgesia.

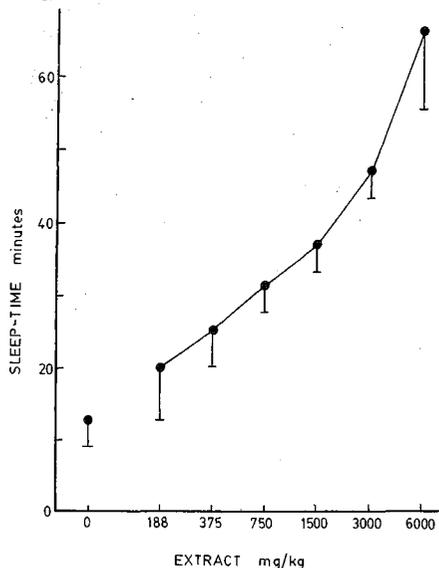


FIG. 1: The effect of pretreatment with star fruit extract on mice sleeping time induced by 35 mg/kg pentobarbitone. Vertical bars = s.e., n = 8.

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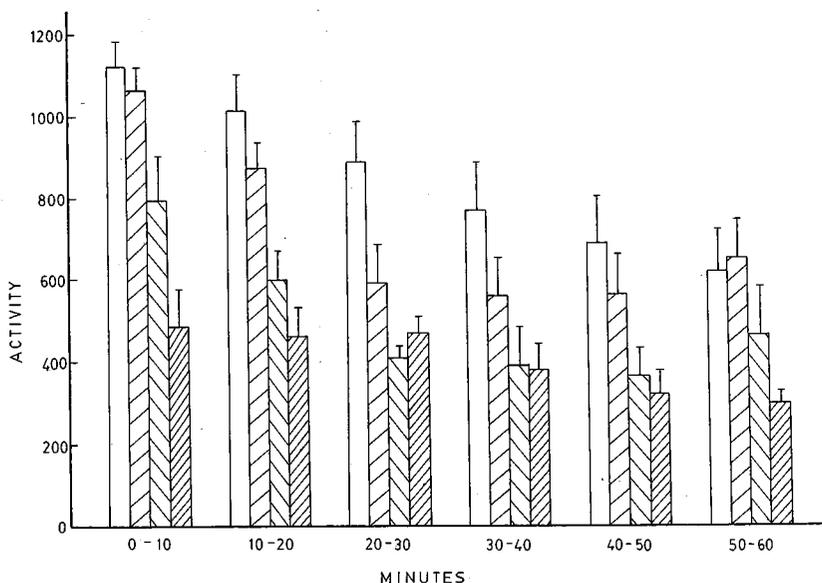


FIG. 2: The effect of star fruit extract on gross locomotor activity of groups of four mice: = saline control; = 188 mg/kg; = 750 mg/kg; = 3000 mg/kg SFX. Vertical bars = s.e., n = 6.

Barbiturate-induced sleeping time: As shown in Fig. I, SFX caused a dose-related increase in pentobarbitone-induced sleeping time of mice, indicating that SFX contains a depressant drug.

Mouse Locomotor activity: As shown in Fig. 2, SFX caused a dose-related reduction in mouse activity. The time of onset of action was longest and the duration of action shortest for the smallest dose (188 mg/kg) of SFX. As dose increased the time of onset of action was reduced and the duration of action increased.

DISCUSSION

The observation that SFX neither caused unconsciousness nor reduced the response to painful stimuli indicates that SFX does not contain an anaesthetic, a sedative or an analgesic. SFX did, however, increase barbiturate-induced sleeping time and reduce activity, each effect suggesting a centrally acting depressant agent.

Thus there is a pharmacologically active depressant substance present which has specific rather than general depressant effects on the central nervous system. Since the pharmacologi-

cal effects of SFX described here mirror those of the tranquilizers (Mantegazza and Piccinini, 1966), it is suggested that the active agent in SFX may be a tranquilizer. Attempts are being made in this department to elucidate the structure of this active ingredient.

SUMMARY

The presence, in the fruit of *Averrhoa carambola* (Star fruit), of a depressant agent with properties similar to those of tranquilizers was demonstrated.

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