J. Trop. Med. Plants. Vol. 4 No. 1 (June 2002)

Analgesic and antihyperalgesic effects of *Scoparia dulcis* decoction in rats

W. D. Ratnasooriya,* G. Galhena , S. S. P. Liyanage , J. R. A. C. Jayakody and E. R. H. S. S. Ediriweera[1]

Department of Zoology, University of Colombo, Sri Lanka
[1]Department of Diagnosis and Treatments, Institute of Indigenous Medicine, University of Colombo, Rajagiriya, Sri Lanka.

Abstract : In Brazil *Scoparia dulcis* Lin. (Family: Scrophulariaceae) is used as an analgesic but not in Sri Lanka due to some unknown reasons. The aim of this study was to examine pain relieving potentials of local plants of *S. dulcis* in rats using plant decoction. The results showed dose-dependent analgesic (in hot plate and formalin tests) and antihyperalgesic activities (in carrageenan induced hyperalgesic model). These pain relieving activities were accompanied with sedative action. It is concluded that local *S. dulcis* plants also have analgesic activity as Brazilian plants and, in addition, have marked sedative and antihyperalgesic effects.

Keywords : *Scoparia dulcis*, analgesia, antihyperalgesia, sedation, nociception.

INTRODUCTION

Scoparia dulcis Lin. (Family: Scrophulariaceae, Sinhala: Wal kottamalli) is a perennial herb commonly found in many tropical countries including Sri Lanka (Dassanayaka, 1981). In folk and traditional medicine in Brazil, it is widely used as an analgesic and this effect has been experimentally proven in mice (de Farias Freire, et. Al, 1993). However, in the traditional Ayurvedic system of medicine in Sri Lanka *S. dulcis* is not used to alleviate pain (as an analgesic or/and antihyperalgesic) although, it is used in several other countries as in Brazil (ex. in diabetes mellitus) (de Farias Freire, et. Al, 1993). Is it due to lack of analgesic and/or antihyperalgesic potentials in Sri lankan *S. dulcis* or due to possession of hyperalgesic activity? We thought it is worth examining because if pain impairing activity is present in the local *S. dulcis* plant, it could be used as a painkiller by Sri Lankan native physicians. As about 35% of the Sri Lankan population still principally depends on Ayurvedic and traditional systems of health care (Mahindapala, 2001) it is likely to be culturally acceptable. The plant is abundant in villages, it also provides a cheaper alternative in a developing nation like Sri Lanka. The aim of this study was to investigate whether local *S. dulcis* plants possess any pain relieving potential using rats and using plant decoction (D).

MATERIALS AND METHODS

Plant Material

Fresh plants were collected from several paddy fields in Kalutara, Sri Lanka in May 2001 and authenticated by Dr. (Mrs.) I. Senevirathna, Department of Botany, University of Colombo, Sri Lanka. A voucher specimen (SN -32) has been kept in the museum of the Department of Zoology, University of Colombo.

Preparation of the decoction (D)

D was prepared as described in detail previously (Ediriweera and Ratnasooriya, 2002) and was freeze-dried and stored at 4°C. Appropriate weights of the freeze-dried D were dissolved in distilled water to obtain desired concentrations (500, 750, 1000 or 1500 mg / kg) in 1 ml aliquots to be given orally.

Animals

Adult cross bred male Wister rats (250-300 g), from the colony reared in the department were used. All rats were kept under standardised animal house conditions with free access to pelleted food and tap water at all times.

Evaluation of analgesic activity

Forty three rats were divided into 5 groups. These rats were orally treated with either distilled water (DW) or D in the following manner: Group1 (n =8, 500 mg / kg), 2 (n =8, 1000 mg / kg), 3 (n =9, 1500 mg / kg), 4 (n =8, 25 mg / kg meparadine hydrochloride, intramuscularly), 5 (n = 10, DW, 1 ml). Nociception (sensation of pain) was determined in all rats in terms of reaction time, 5-6 h before treatment and 1 to 4 h post treatment (between 12.00 – 17.00 h), hourly, using tail flick (Langerman, et.

* Author for correspondence. Mailing address: W. D. Ratnasooriya, *Department of Zoology*, University of Colombo, Sri Lanka