Medical Science Research 1999, **27**:375–378

Effects of *Mucuna prurita* seeds on sexual behaviour of male rats

W.D. Ratnasooriya, M.G. Dharmasiri and D.C. Sirisena

Department of Zoology, University of Colombo, Colombo 3, Sri Lanka

Requests for reprints to Professor W.D. Ratnasooriya, Department of Zoology, University of Colombo, Colombo 03, Sri Lanka.

Received 16 March 1999; accepted 26 March 1999

Abstract: In Sri Lanka, in the Ayurvedic medicine, seeds of *Mucuna prurita* (both with seed coats and without seed coats) are recommended to be used as an aphrodisiac. However, the validity of this claim is not established. The aim of this study was to test the aphrodisiac potential of *M. prurita* seeds using a powdered suspension in 1% methyl cellulose. Male rats were treated orally with different doses of whole powdered seed suspension (WPSS) [1,500 mg/kg ($n = 12$) once a day; 1,500 mg/kg ($n = 12$) twice a day or 1,500 mg/kg ($n = 12$) three times a day] or decoated powdered seed suspension (DPSS) [1,500 mg/kg ($n = 12$) twice a day and 1,500 mg/kg ($n = 6$) three times a day] or vehicle. The male sexual behaviour of these rats was monitored 2 h later. The DPSS had no effect whatsoever on male sexual behaviour. In contrast, mid and high doses of the WPSS caused a marked reduction in pre-coital sexual behaviour (in terms of chasing, genital grooming, anogenital sniffing), failure of rats to mount, intromit or ejaculate and prolongations of latencies to mount and intromit. In addition, the mid dose of WPSS caused a prolongation of intercopulatory interval. These impairments of sexual behaviour were reversible. The mid dose also had marked sedative (in terms of impairment of numbers of rear, head dips, locomotory activity) and analgesic (marked prolongation of reaction time in both tail flick and hot plate test) effects. This dose inhibited neither muscle strength (assessed by a bar holding test) nor muscle co-ordination (Bridge test). We conclude that the WPSS of *M. prurita* seeds inhibited libido, sexual arousal/motivation and penile tactile sensitivity without disrupting sexual performance.

Keywords: aphrodisiac, coat, libido, masculine sexual behaviour, *Mucuna prurita* seeds, sexual arousal

Introduction: Aphrodisiacs are useful in certain forms of male sexual inadequacy. Swayamprakasam [1] claims that from the 12th century the Ayurvedic pharmacopoeia included several herbal aphrodisiacs. According to the Sri Lankan Ayurveda pharmacopoeia, the seeds of *Mucuna prurita* Hook (Family: Leguminosae, Wnduruma in Sinhala and Amudari in Tamil) in the form of a powder is a powerful aphrodisiac [2]. Some Ayurvedic physicians claim that it is the decoated seed that possesses aphrodisiac properties, others that the entire seed has to be used. As yet, the validity of any of these claims has not been scientifically proven or refuted.

The serotonergic system plays an inhibitory role in the neural control of male sexual behaviour: serotonin and serotonin agonists increase intromission-and-ejaculatory latencies and the post-ejaculatory interval [3] whilst the serotonin synthesis inhibitor, p-chlorophenylalanine, facilitates masculine sexual behaviour [4].

M. prurita seeds with their seed coat contain tryptamine, a precursor of serotonin. Thus there is a strong possibility that the seeds complete with coat possess aphrodisiac activity. Further, *M. prurita* seeds contain a variety of alkaloids, nicotine and L-DOPA [5] all of which can affect male sexual functions [6]. These too could contribute to the claimed aphrodisiac action.

We therefore initiated this study to evaluate the effects of entire seeds and decoated seeds of *M. prurita* on male sexual behaviour using rats.

Materials and methods: Dried *M. prurita* seeds with dark brown stripes and spots were purchased from an Ayurvedic drug store in Colombo, Sri Lanka. Some of the seeds were decoated using a sharp nut cracker and the kernel was exposed. Both the decoated seeds and the seeds with coats were finely powdered separately using an electric grinder. The two resulting powders were separately suspended in 1% methyl cellulose (vehicle) (Griffin and George Ltd, Wembley, UK) to obtain a concentration of 1,500 mg/kg in 1 ml: decoated powdered seed suspension (DPSS) and whole powdered seed suspension (WPSS). Both these suspensions were freshly made daily for oral administration.

Sexually experienced healthy adult crossbred albino rats weighing 225–250 g and females weighing 200–225 g) from our own colony were used. They were kept in wire mesh cages under standardized animal house conditions (temperature; 28–31 °C, photoperiod approximately 12 h natural light per day, humidity; 50–55% with free access to pelleted food (Vet House Ltd., Colombo, Sri Lanka) and tap water.

81 male rats were randomly assigned into eight groups and were orally treated with seed suspensions as follows: (1) WPSS 1,500 mg/kg, once a day (at 14.00) h), $n = 12$; (2) WPSS 1,500 mg/kg, twice a day (at 11.00 and 14.00 h), $n = 12$; (3) WPSS 1,500 mg/kg, three times a day at 9.00, 12.00 and 14.00 h), $n = 12$; (4) DPSS 1,500 mg/kg, twice a day (at 11.00 and 14.00 h), $n = 12$; (5) DPSS 1,500 mg/kg three times a day (at 9.00, 12.00 and 14.00 h) $n = 6$; (6) 1 ml vehicle, once a day (at 14.00 h) $n = 9$; (7) 1 ml vehicle, twice a day (at 11.00 and 14.00 h) $n = 12$; and (8) 1 ml vehicle, three times a day (at 9.00, 12.00 and 14.00 h) $n = 6$.

Following administration of either the seed suspensions or vehicle the rats were observed throughout the study period for any overt signs of toxicity or stress. The rectal temperature of the treated rats were monitored using clinical thermometer (3 h following administration of the seed