Ancient Science of Life, Vol No. V No. 3 January 1986, Pages 156 - 160

MIMOSA PUDICA (LINN.) ITS MEDICINAL VALUE AND PILOT CLINICAL USE IN PATIENTS WITH MENORRHAGIA

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Received: August 3, 1985 **Accepted: September 16, 1985**

ABSTRACT: *A brief review of Mimosa Pudica (Linn) covering its medicinal value, clinical use and Ayurvedic aspects, is presented here.*

INTRODUCTION

Mimosa pudica (Linn) Touch – me – not, called Lajavanti / Lajjalu must have attracted the attention of man, since prehistoric times. Its property to respond to touch must have intrigued man and magical and medicinal value must have been ascribed to the plant. The medicinal use of the plant dates back to Caraka (1) and Susruta (2). *Mimosa pudica* is one of the ingredients in a prescription for excessive uterine bleeding in a Gujarati Ayurvedic book (3). One of the authors (GHV) was impressed by its beneficial effects, when it was prescribed by late Yogi Sri Ranchhoddasji Maharaj.

Botany:

Mimosa pudica (Linn.) is a commonly found weed, growing wildly all over the warm and humid zones of India, Africa and tropical America. It belongs to N. O. Leguminosae. It is a diffuse, widely spreading shrub (Finger 1); 45 to 90 cms in height. The stem and branches are covered with long weak bristles and tiny thorns. The sensitive leaves are digitately compound and the leaflets are in 12 – 20 pairs, narrow oblong and acute. The flowers are small mauvish – pink round heads, with a minute calyx. The pods, which are 2.5 to 3.5 cms in length, have fine bristles and consist of 3 to 5 one seeded joints. The roots are reddish brown in colour, cylindrical, slightly tapering and branching in all directions (4).

Pharmacognosy:

Roots of *Mimosa pudica* have characteristic 6 to 8 layers of cork cells. The latter are mostly uniform in shape – tangentically cut – rectangular and radially cut – flattened. Under the periderm, thin walled parenchyma filled with starch granules constitutes the secondary cortex. Tannin and rhomboid crystals of calcium oxalate are seen in many cortical cells. The cortex is thick. The xylem contains large number of vessels of different sizes. The root powder, greyish brown in colour, - is characterized by – starch grains, crystals, cork cells, tannin – containing cells, reticulate vessels, pitted parenchyma, pitted and nonpitted fibres, thin cortical cells, tracheids etc. (5).

Phytochemistry (6)

The plant contains an alkaloid – Mimosine (CB H 10 04 N2) – in very small quantities. It is identical with leucinal. The essential oil contains furnisal, linalool, geraniol and several aldehydes including anise aldehyde and benzaldehyde. An adrenaline – like substance has been identified in the extract of leaves of *Mimosa pudica.* Crocetin dimethylester has been detected in the pulvini of the plant. The flowers show the presence of proteins, carbohydrates, fats, fibres and ash. Leaves and stem do no contain quinine or quinidine. Flavonids, acting on capillaries and small blood vessels, have to be investigated in the plant. The roots contain 10% tannin, ash, calcium oxalate crystals and mimosine.

Medicinal Uses:

Desai ascribes haemostatic use of the plant to its action on small blood vessels (7). The root is used for dysentary with blood / mucus, piles and urinary calculi. The fresh juice of leaves is given internally to stop bleeding. The paste of the leaves is applied externally on piles, fissures, skin wounds, ulcers, etc. In southern India, the plant is used for piles. In South – East Asia viz Cambodia, *Mimosa pudica* has a reputation for therapeutic effect on vesical calculi (8). The root powder was prescribed in a dose of 2 – 3 gms. Along with curds, as mentioned by M. S. Vaidya (9). The root powder, in a paste form is also applied to vaginal prolapse.

Plant Material and Medication

Mimosa pudica (Linn.), identified properly by botany and pharmacognosy, was commercially purchased from known pharmaceutical and herb – merchants. The roots were cleansed, washed, dried in shade and pulverized. The root powder was extracted with water. This dry aqueous extract was used for the acute toxicity studies in mice and observational studies in rats. For the medication in patients the formulations of *Mimosa pudica* were utilized. The standardized extract was prepared at Haffkine Institute. The dose of the dry extract was 5 – 10 ml three to four times in a day. Subsequently, the micronized powder of the dry extract was used in capsules of 500mg. 2 – 3 capsules t. d. s. in 2 patients. The equivalence of the dose was maintained on the basis of the water evaporation. One patient opted for fresh paste of the root, prepared at home.

Acute Toxicity

The aqueous dry extract of *Mimosa pudica* was injected intraperitoneally in rats as a suspension of carboxymethyl cellulose (80 mg/ml). Groups of five rats each were given 200, 400, 600 and 1600 mg/kg of the suspension of *Mimosa pudica.* Only mild sedation was observed for 1 hour. No deaths occurred.

In albino female mice, the root extract of *Mimosa pudica* was given intraperitoneally in doses of 100, 200, 400 and 800 mg / kg. Table 1 shows the results. The LD 100 was 400 mg/kg and LD o was 100 mg/kg.

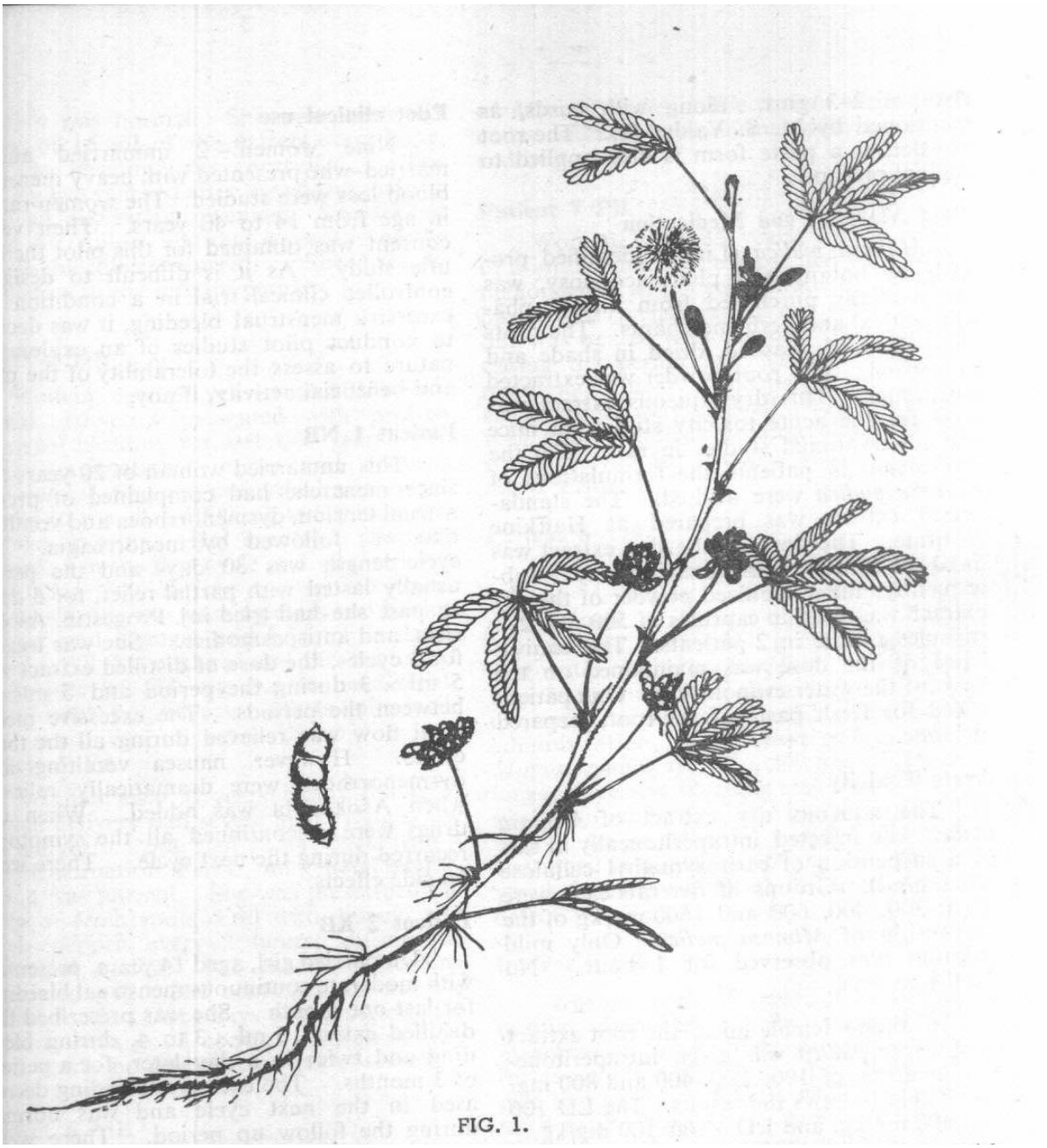

FIG. 1.

TABLE – 1

Acute Toxicity in Mice

Dose mg / kg	Mortality at 24 hours
100	0/5
200	3/5
400	5/5
800	5/5

Pilot clinical use

Nine women – 2 unmarried and 7 married – who presented with heavy menstrual blood loss were studied. The woman ranged in age from 14 to 40 years. Their verbal consent was obtained for this pilot therapeutic study. As it is difficult to design a controlled clinical trial in the condition like excessive menstrual bleeding, it was decided to conduct pilot studies of an exploratory nature to assess for tolerability of the plant and beneficial activity, if any.

Patient 1 NB

This unmarried woman of 20 years age, since menarche had complained of premenstrual tension, dysmenorrhoea and vomiting that was followed by menorrhagia. The cycle length was 30 days and the period usually lasted with partial relief, for 5 days. In past she had tried inj. Progestin, Asokarista and antispasmodics. She was treated for 3 cycles; the dose of distilled extract was 5 ml x 3 during the period and 5 ml x 2 between the periods. The excessive menstrual flow was relieved during all the three cycles. However, nausea vomiting and dysmenorrhoea were dramatically relieved when Asokarista was added. When the drugs were discontinued all the symptoms recurred during the next cycles. There were no side effects.

Patient 2 NB

Unmarried girl, aged 14 years, presented with moderate continuous menstrual bleeding for last one month. She was prescribed the distilled extract 5ml x 3 to 4, during bleeding and twice in a day later, for a period of 3 months. The excessive bleeding decreased in the next cycle and was normal during the follow up period. There were no side effects of the drug. The patient had menarche two years before presentation, followed by a period of amenorrhoea until the heavy period.

Patient 3 KH

Woman, aged 35 years with a history of 2 full – term normal deliveries presented with profuse menstrual bleeding. She usually had occasional episodes of such profuse bleeding, with regular cycles. Vaginal examination was normal. She was prescribed a dose of 15 ml of the extract every hour, until the bleeding was controlled. The bleeding was relieved after two doses and she could go out by the evening. She did not report for follow up until 4 years when the profuse bleeding recurred. She had no complaints in the interim period.

Patient 4 DL

Woman, aged 40 years with 9 full – term normal deliveries presented with profuse menstrual bleeding for last two years. On Pelvic examination, uterus and adenexa were normal. She was prescribed micronized powder in capsules – 1000 mg twice in a day for two months. Her excessive bleeding responded in the first cycle and was relieved more than 50% during the second cycle. Previously, she was passing clots and having 3 – 4 sari – pad changes and had to lie down in bed. All this changed and she continued on a dose of 500 mg. B.D. to have relief. There were no adverse effects observed.

Patient 5 VA

Woman, aged 35 years, with a full – term normal delivery had severe menorrhagia for last ten years. She had 28 day cycle with 4 day menstruation. Pelvic and general examination was normal. She was prescribed the paste of fresh roots 5ml with honey and black pepper every 2 hours, during the menstrual period. The excessive bleeding responded well. She continued to take the extract for first three days of the period, for 2 years, with good control. In spite of use for 2 years, no side effects were observed.

Patient 6 MK

Woman, aged 34 years, with 2 full term normal deliveries and one miscarriage, presented with sever menorrhagia. The cycle length was of 28 days and the bleeding lasted for 5 to 6 days. The pelvic and general examinations were normal. With the extract and later with the capsules, the patient was relieved of her excessive menstrual blood loss. The patient was treated for 4 years, with good control. The long term therapy did not show any side effects of *Mimosa pudica.* The patient had a pregnancy and full – term normal delivery at the end of 4 years.

Patient 7 PB

Woman, aged 35 years, had a history of a miscarriage. She presented with severe menorrhagia with cycle length of 20 to 25 days, with menstruation for 4 to 5 days. She was treated with capsules 100 mg B.D. during the period and 500 mg. B.D. as a maintenance dose. The pelvic and general examinations were normal. She responded well and excessive bleeding stopped. She was observed for 2 cycles and left for her native place.

Patient 8 TH

Woman, aged 30 years, had 2 full – term normal deliveries. She presented with menorrhagia of 4 years duration. She had been treated by several gynaecologists for dysfunctional uterine bleeding. Even blood transfusion had to be given. The hormonal treatment was discontinued prior to the administration of *Mimosa pudica*. With

Mimosa pudica capsules 500 mg x 3 the prolonged excessive bleeding responded dramatically within 2 days. The patient missed the period while *Mimosa pudica* was being continued in a dose of 500 mg x 2. She delivered a healthy baby at full term, with no defects.

Patient 9 SR

Woman, aged 35 years, had 8 full – term normal deliveries. She complained of menorrhagia after dilatation and curettage for incomplete abortion. The patient was pale and had cycle length of 25 days with 3 to 4 days duration of flow. Extract of *Mimosa pudica* was given initially 15 ml. 2 hourly. She was treated with standard dose for 4 months and her cycles continued to be normal, and the excessive bleeding was controlled. There were no side effects.

Comments

The plant *Mimosa pudica* (Linn.) in these pilot studies, has shown promise in further detailed trials in a larger sample size of patients with dysfunctional uterine bleeding. The tolerability of *Mimosa pudica* was good and still it is desirable to carry out conventional phase 1 studies with organ function tests, prior to embarking on a large scale phase III studies. There is an urgent need to conduct a survey of traditional plants useful in menorrhagia, dysmenorrhoea and related disorders. Such a survey may identify plants with potential therapeutic value. A team approach for involving such a study is desirable; vaidyas clinical pharmacologists, gynaecological endocrinologists, botanists and medicinal chemists, should pool their expertise for a meaningful research project.

REFERENCES

1. Atreya Punarvasu, Charak & Dhridhbala, Charak Samhita Shree Gulabkunverba Ayurvedic Society, Jamnagar, 2. P. 53, 59. Sloka 31. (1949).

2. Sushrut Samhita Sutrasthan, I. Meharchand Lachhmandas, Lahore, 38. P 213 : Sloka 22, 23 & 46 (1936).

3. Vaidyak Sambandhi Vicharo Sastu Sahitya, Bombay, p. 479 (1969).

4. Wealth of India (Raw Materials) Council of Scientific and Industrial Research, New Delhi 6. P. 382 (1962).

5. S. C. Dutta and B. Mukerji, Pharmacognosy of Indian Roots & Rhyzome Drugs, Govt. of India Press, Calcutta, p. 52, (1952).

6. (a) W. O. Emery Pharmaceutical Chemistry, (Essential Oils of Mimosa, Emilio Carezzo). Chemical Abstract, 28 : 3526 (1934).

   (b) E. L. Calaline; Pharmaceutical Cosmetics and Perfumes, (Local “fever” plants tested for presence of alkaloids a. J. Loustalot and C. Pagin) Chemical Abstract, 444: 2180 (1950).

7. J. T. Acarya V. G. Desai, Aushadhi Sangraha : P. 286 (1927).

8. K. R. Kirtikar and B. D. Basu, Indian Medicinal Plants, 2 : P 915 (1935).

9. Vaidya Mayaram Unpublished notes.