

NEUROPHARMACOLOGICAL PROFILE OF SOMINA (HERBAL DRUG) IN MICE AND RATS

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ABSTRACT:

The present study was performed to investigate the neuropharmacological effect of Somina (a herbal drug prepared by Hamdard Laboratories waqf Pakistan). This work evaluated the anxiolytic/sedative/hypnotic activity of somina using the elevated plus-maze model of anxiety, open field and other complementary pharmacological tests. The two doses of Somina (285mg/kg and 10g/kg) significantly reduce the open field activity increased the time spent in the open arm and the mobility time in the plus maze and in the swimming tub respectively by decreasing the anxiety and stress while Somina decreased the open field activity showing the sedative nature of somina whereas the Somina prolonged the duration of sleeping time indicates the hypnotic behavior of somina. These results also underlie the medical and industrial use of this drug somina and lead to the conclusion that it is an effective sedative, hypnotic and anxiolytic drug and also decrease the chances of neuropsychiatric disorders.

INTRODUCTION

Stress and Anxiety both are neurological state. These are natural reaction to excessive pressure in people. It isn't a disease but if it is excessive and goes on for some time, it can lead to mental and physical ill health (Borne, 2003). Iqbal *et al.* (2002) reported that in Pakistan, sixty five percent patients presented with various mental disorders out of these some have mood disorders (34%), anxiety disorder in 30% and remaining had delirium and somatoform disorders. If these disorders are not treated they become chronic, relentless, and can grow progressively worse. There are different psychosocial (non-drug) treatments and psychotropic medications are touted for the treatment of anxiety like azaspiroines, benzodiazepines, beta blockers, Ttricyclics antidepressant (TCAs), monoamine oxidase

inhibitors (MAOIs), serotonin reuptake inhibitors (SRIs) but long term use of these drugs lead to physical dependence and tolerance (Wood *et al.*, 1996, Ashton, 1984, Busto *et al.*, 1986). During the last decade the use of herbal medicines have been tried to alleviate the symptoms of depressive disorders using animal model (Sharma, 1993). It is claimed that somina (herbal preparation) prepared by Hamdard Laboratories (Waqf) Pakistan composed of five medicinal plants (*Sesamum indicum* (14%), *Prunus amygdalus* (12%), *Papaver somniferum* (10%), *Lactuca scariola* (5%), *Lagenaria vulgaris* (12%) has sedative, hypnotic, anxiolytic activities. It is stated that somina is extremely beneficial in the state of tension, fear and anxiety. It produces natural hypnosis. It arrests insomnia and gives a sound, refreshing sleep. It is widely prescribed for the treatment of mental

illness. It is also claimed that somina improves memory processes and effective in alertness of brain and increases its retentive power.

The individual components of somina is used traditionally and their reported activities are as follows:

- a) *Sesamum indicum* belongs to family Pedaliaceae. Aftab (1995) reported that *Sesamum indicum*, reduces the blood pressure and heart rate it is also suggested that *Sesamum indicum* contain tryptophan (Morris, 2002) had a beneficial effect on memory functions (Levkovitz, 2003)
- b) *Prunus amygdalus* belongs to family Rosaceae, has been found to improves brain functions (Himalaya herbs and minerals, 2002).
- c) *Papaver somniferum* belongs to family Papaveraceae, it is reported that the hypnotic and sedative property is helpful in relieving hysteria (Khan, 1997).
- d) *Lactuca scariola* (seed extracts) belongs to family Compositae/Asteraceae. It is useful against nervousness, palpitation (Khan, 1997), in insomnia (Khan, 1997). It is also useful in depression having sedative and hypnotic activities (Khan, 1997).
- e) *Lagenaria vulgaris* belongs to family Cucurbitaceae. It is sedative and used as a traditional brain tonic (Khan, 1997).

On the basis of above reported facts in literature regarding the individual constituents of Somina. The present work has been planned to study the sedative, anxiolytic and hypnotic activity of Somina by using new and sensitive technologies and statistical analysis.

MATERIALS AND METHODS

Plus maze activity

The anxiolytic activity was assessed using Elevated plus maze as described by Pellow (1985). The plus maze consisted of two opposite open arms, crossed with two arms of the same dimensions with a high wall. The

arms were connected with a central square to give the apparatus a plus sign appearance. The maze was elevated above the floor in a dimly lit room. Rats (n=5) were treated with Somina (285mg/kg) or Somina (10g/kg) or vehicle 30 min before placing them individually in the central square facing an enclosed arm. The time spent by the Rats, during the next 5 min on the closed and open arms was recorded.

Anxiolytic activity by forced swim test

The animal first administered drug of either Somina (285mg/kg) or Somina (10g/kg) or saline. Thirty minutes after drug administration the experiments will be carried out (Porsolt *et al.*, 1977).

Sedative activity by open field test

Rats were pretreated with Somina (285mg/kg) or Somina (10g/kg) or vehicle. The experiments will be carried out according to the method first described by Janssen (1960): Dandiya and Kulkarni (1975). Thirty minutes after drug administration the rats were placed in open field and their activity was recorded for next 5 min.

Determination of hypnotic activity by Sodium Pentothal induced sleeping time

Rats were pretreated with Somina (285mg/kg) or Somina (10g/kg) or vehicle 30 min before Sodium Pentothal (42mg/kg) administration. The onset to loss the righting reflex was recorded and induction of sleep time. The onset to loss the righting reflex and the time between loss and recovery of the righting reflex were recorded. This duration of the righting reflex loss after receiving Sodium Pentothal was taken as sleeping time (Dandiya and Collumbine, 1959).

RESULTS

Result of plus maze activity demonstrated that Somina (285mg/kg and 10g/kg) treated rats remained for $121.8 \pm 16.1s$ and $124.2 \pm 13.05s$ in the opened arm respectively whereas control rats remained in open arm for $94.8 \pm 9.22s$. The Somina increased the time

spent in the open arm significantly ($P < 0.05$ & $P < 0.05$ respectively) and the increase in this activity is dose dependent (Fig. 1).

Somina increased the mobility time as shown in Fig. 2. Somina (285mg/kg and 10g/kg) treated rats remained active for $112 \pm 3.74s$ ($P > 0.05$) and $120.2 \pm 6.68s$ ($P < 0.025$) in the swimming tub whereas control rats remained for $99 \pm 9.4s$. The Somina increased the swimming time by decreasing the anxiety and stress (Fig. 2) and the increase in this activity is dose dependent.

Somina decreased the open field activity as shown in Fig. 3. Somina decreased the mobility time as shown in Fig. 3. Somina (285mg/kg) decreased the open field activity significantly ($P < 0.025$), from 86.8 ± 4.9 to 62.8 ± 9.7 and Somina (10g/kg) from 86.8 ± 4.9 to 43.6 ± 9.5 (Fig. 3) this decrease is also significant ($P < 0.005$), and the activity is dose dependent showed the sedative effects.

Somina (285mg/kg) decreased the induction of sleep time significantly ($P < 0.05$), as shown in Fig. 4 from $140.4 \pm 16.8s$ to

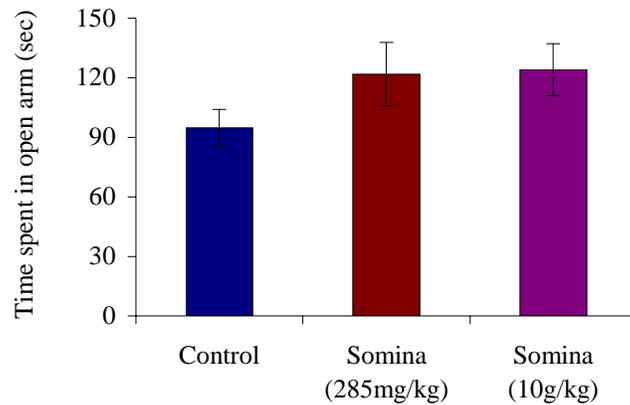


Fig. 1. Effect of Somina on Plus maze activity. Values are mean \pm SE (n=6). Significant difference by Students t-test.

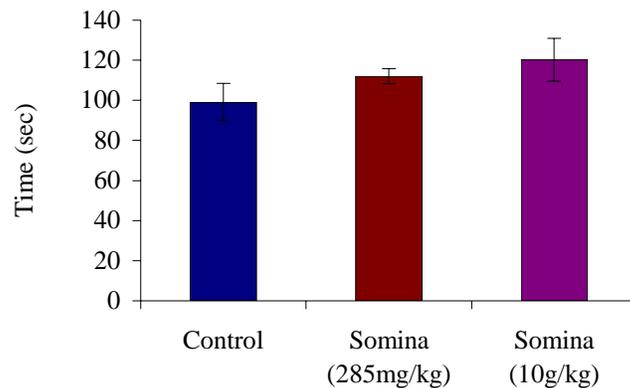


Fig. 2. Effect of Somina on swimming induce stress. Values are mean \pm SE (n=6). Significant difference by Students t-test.

102±5.95s and Somina (10g/kg) from 140.4±16.8s to 107±13.9s (Fig. 4) significantly ($P<0.05$), but the activity is not dose dependent.

The control rats slept for 328.4±7.8min, whereas the animal treated with Somina 285mg/kg or 10g/kg prolonged the duration of sleeping time significantly ($P<0.05$ and $P<0.005$ respectively) to 360±15min and 393±4min, respectively Fig. 5.

DISCUSSION

In the present study Somina appears to have an influence on alteration in general behavioral profile. The results indicate that the somina exhibited anxiolytic activity in a variety of animal models. The elevated plus maze test is design to detect the effect of anxiolytic drugs (Hogg, 1996). Drugs that increase open arm exploration are considered anxiolytic (Handley and McBlane, 1993). The

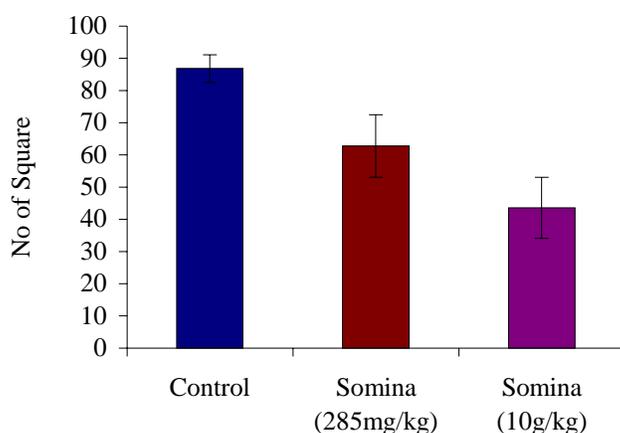


Fig. 3. Effect of Somina on Open Field Activity. Values are mean±SE (n=6). Significant difference by Students t-test.

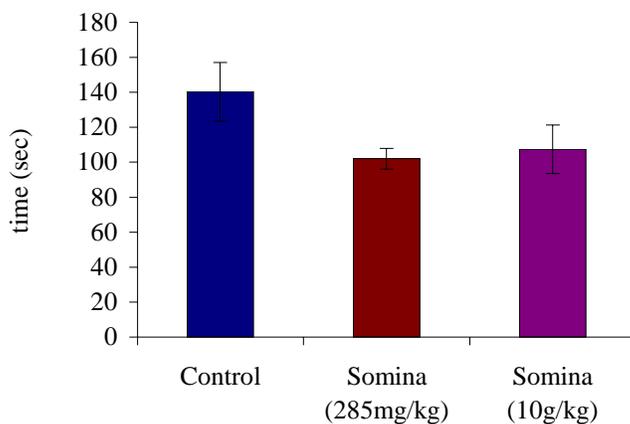


Fig. 4. Effect of Somina on induction of sleep time. Values are mean±SE (n=6). Significant difference by Students t-test.

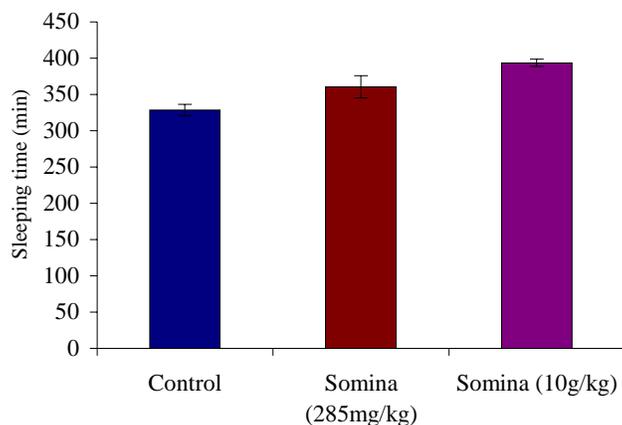


Fig. 5. Effect of Somina on sleep time. Values are mean \pm SE (n=6). Significant difference by Students t-test.

dose of somina (285mg/kg) increases in occupancy of animals in the open arm or decrease in the time spent in the closed arm of elevated plus maze indicates anxiolytic like action. A different group of rats were submitted to the open field activity to observe the sedative effect of somina. The results obtained in the open field showed that somina appears to have a sedative effect, since somina significantly reduce the open field activity in rats after 1h at the dose of 285mg/kg as shown in Fig. 3. This sedative activity is further confirmed by the sleeping induction test in rats. Results show that administration of after 2-week somina decrease the sleep induction time (Fig. 4) while it significantly potentiates the duration of sleep (Fig.5). In our opinion, constituents of somina like *Papaver somniferum* possess hypnotic and sedative property and it is used in traditional medicine in relieving hysteria (Khan, 1997). The *Prunus amygdalus* has been reported to improve brain functions (Himalaya herbs and minerals, 2002). In spite of this *Lagenaria vulgaris* and *Lactuca scariola* are useful in depression having sedative and hypnotic activities (Khan, 1997) also used in traditional medicine having sedative activity (Khan, 1997). It has been reported that Somina drug

increases the Dopamine levels in rats' brain (Azmat *et al.*, 2004). Meschler *et al* (2000) suggested that Dopamine receptor agonist potentiates sedation. All the effects independently produced by various ingredients in Somina are producing a total beneficial effect on brain.

CONCLUSION

In the present study it is concluded that Somina is a physiologically and pharmacologically active drug. Somina the herbal formulation used in this study is an effective sedative, hypnotic and anxiolytic drug and it decrease the chances of neuropsychiatric disorders.

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