IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 18, Issue 9 Ser.6 (September. 2019), PP 30-32
www.iosrjournals.org

Sleep Promoting Effect of Polyherbal Drug MENTAT

K Kiran Prasad Reddy[1], R Pravin kumar[2]
[1](*Assistant professor, dept. Of Pharmacology, GMC kadapa, Dr NTR university of health sciences, Andhra Pradesh, India.)*
[2](*Assistant professor, dept. Of Pharmacology, GMC, omandurar govt estate, Chennai, Tamilnadu, India.)*
Corresponding Author: R Pravin kumar,

Abstract: *Mentat, a polyherbal psychotropic preparation, is mostly used for its memory enhancing property. Only limited studies established that mentat possesses sleep promoting property. The present study was carried out to evaluate sleep promoting property of mentat in animal models of diazepam induced sleeping time. Sleep promoting effect of mentat was assessed in three groups of rats (n=6). The animals were treated orally (p.o.) with 300 and 600 mg/kg of mentat one hour before administering diazepam intraperitoneally (i.p). Sleep latency and total sleep time were used as parameters for evaluation. Mentat exhibits dose dependent sleep promoting effect in diazepam induced sleeping time. Sleep promoting effect of mentat in combination with GABAergic drug diazepam, suggested that these drugs have common mechanism in sleep promoting effect and could be used along with other GABAergic hypnotics in treatment of insomnia, so that we can reduce the dose of hypnotics. Mentat can be used for the treatment of sleep and sleep related disorders.*

Keywords: *Mentat, Insomnia, GABAergic, Diazepam induced sleep.*

Date of Submission: 27-08-2019 Date of Acceptance: 11-09-2019

I. Introduction

Insomnia, or sleeplessness, is an individual's reported sleeping difficulties. "Insomnia" is derived from the Latin word "Somnus", the name of the roman God of sleep, with the incorporation of the prefix "in-" to add contradiction. While the term is sometimes used in sleep literature to describe a disorder demonstrated by polysomnographic evidence of disturbed sleep. Insomnia is most often thought of as both a sign and a symptom that can accompany several sleep, medical, and psychiatric disorders characterized by a persistent difficulty falling asleep and/or staying asleep or sleep of poor quality.(1)

In recent times, focus on plant research has increased all over the world and a large body of evidence has collected to show immense potential of medicinal plants used in various traditional systems as these products have less adverse effects. More than 13,000 plants have been studied during the last 5 year period. The World Health Organization (WHO) estimates that 4 billion people, 80% of the world population, presently use herbal medicine for some aspect of primary health care. WHO notes that of 119 plant-derived pharmaceutical medicines, about 74% are used in modern medicine in ways that correlated directly with their traditional uses as plant medicines by native cultures. Major pharmaceutical companies are currently conducting extensive research on plant materials gathered from the rain forests and other places for their potential medicinal value.(2)

Mentat a herbal psychotropic preparation contains various ingredients reputed in the ancient system of Ayurvedic medicine to be useful in the management of nervous disorders. It contains the following indigenous ingredients, reported in the ancient system of Ayurvedic medicine, to be of value in the management of nervous disorders: Ashvagandha (Withania somnifera), Vacha (Acorus alamus), Shatavari (Asparagus racemosus), Brahmi (Hydrocotyl asiatica), Amla (Emblica officinalis) and Shankhapushpi (Evolvulus alsinoide).(3)

Preliminary pharmacological investigations indicated it to be a safe preparation with central action particularly anticonvulsant, nootropic, sedative, and anti anxiety properties.(4-6) The sedative and tranquilizing effects of mentat are useful in treatment of insomnia. Therefore we conducted this study to explore the sleep promoting effect of Mentat.

II. Materials and Methods

Animals : Albino male rats (Wistar) weighing 180-250 g were obtained used foe this study. They were housed in standard polypropylene cages with paddy husk as bedding and kept under controlled room temperature (24 $\pm$ 2^0C; relative humidity 60-70%) in a 12h light –dark cycle. Animals were given a standard laboratory diet and water ad libitum. All experiments were run between 09:00 AM and 13:00 PM in order to minimize the effect of circadian rhythms. Animals were acclimatized to laboratory conditions one week prior to initiation of experiments. All the experiments involved in this work were performed in accordance with "Committee for

Purpose of Control and Supervision of Experimental Animals" (CPCSEA) guidelines for the use and care of experimental animals.

All the experimental procedures and protocols used in this study were carried out according to the guidelines of institutional animal ethical committee and Ethical committee clearance was obtained from IAEC (Institutional Animal Ethics Committee)

Drugs : Mentat (Himalaya drug co.), different concentrations of mentat were prepared by serial dilution from a stock solution of 100 mg/ml in sterile water. Diazepam was used as reference drug, it was diluted to required strength before use. All the solutions were prepared fresh on the test day.

Diazepam induced sleeping time:[7]

The method described by Beretz *at el*. (1978) and modified by Rakotonirina *et al.* (2001) was adopted in this study. 18 adult male rats were divided in to 3 groups of six rats in each group. The first group was administered normal saline (1 ml/kg), second and third groups were administered mentat at the dose of 300 and 600 mg/kg (p.o). One hour later, diazepam at a dose of (4 mg/kg) was administered to all the rats intraperitoneally. Each rat was then observed for the onset and duration of sleep. The criterion for sleep is the loss of righting reflex, in which the rat cannot roll back when turned over. The interval between loss and recovery of rightening reflex was used as the index of hypnotic effect.

Statistical Analysis:

The data was collected in case record forms. Then they were entered into excel spreadsheet 2007. Statistical analysis was performed using Microsoft Excel-2007 and Sigma Graph pad prism version-5 USA. Data was described as Mean (Standard deviation).[8] One way ANOVA followed by Dunnets test to compare control with all other columns and Newman-Keuls Multiple Comparison Test was used for analysis of data between the inter individual groups . For all inferential statistical tests a two tailed $P < 0.05$ was considered significant. All the results of test drug [mentat 300and 600mg/kg] were compared with control as well as standard groups.

III. Results

The onset of sleep in the control (group I) was 15.32(2.05) minutes and mentat treated groups at doses 300 mg/kg(groupII) and 600 mg/kg(groupIII) were 13.92(1.05) and 9.84(1.22) minutes. It shows that mentat 600mg/kg has significant ($p<0.001$) property of inducing sleep comparing to control.

The mean sleeping time in the control (groupI) was 41.5(2.16) minutes and mentat treated groups at doses 300 mg/kg(groupII) and 600 mg/kg(groupIII) were 56.3(5.6)and 90.5(4.93)minutes respectively . It shows that mentat has significant hypnotic property.

s.no	**Gruoup &dose (mg/kg)**	**Latency to onset of sleep in min.(mean SD)**	**Mean sleeping time in Min.(means.SD)**
1.	Group I : control (NS) **	15.32 (2.05)	41.5 (2.16)
2.	Group II :Mentat 300mg/kg(p.o)	13.92 (1.05)	56.33 (5.6) *
3.	Group III : :Mentat 600mg/kg(p.o)	9.84 (1.22) *	90.5 (4.93) *
* - p<0.001 compared to control **NS- normal saline			

Table 1:- Effect of mentat on diazepam induced sleeping time in rats (n=6)

Shows the effect of mentat on diazepam induced sleeping time

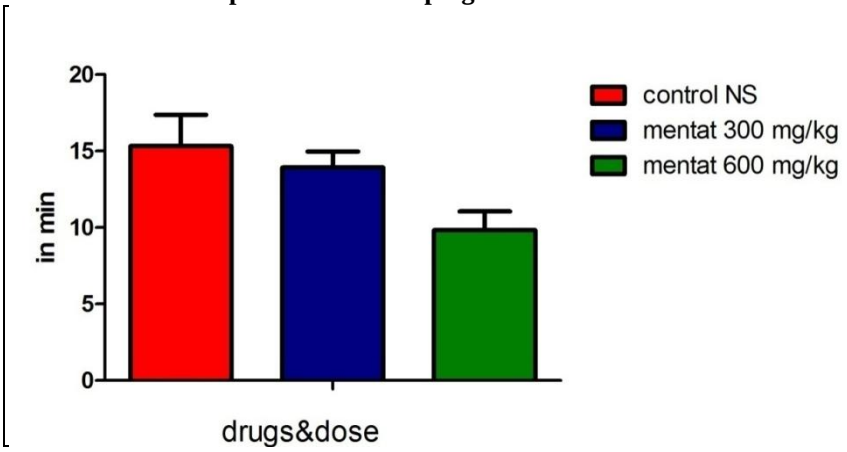

Fig 1:onset of sleep

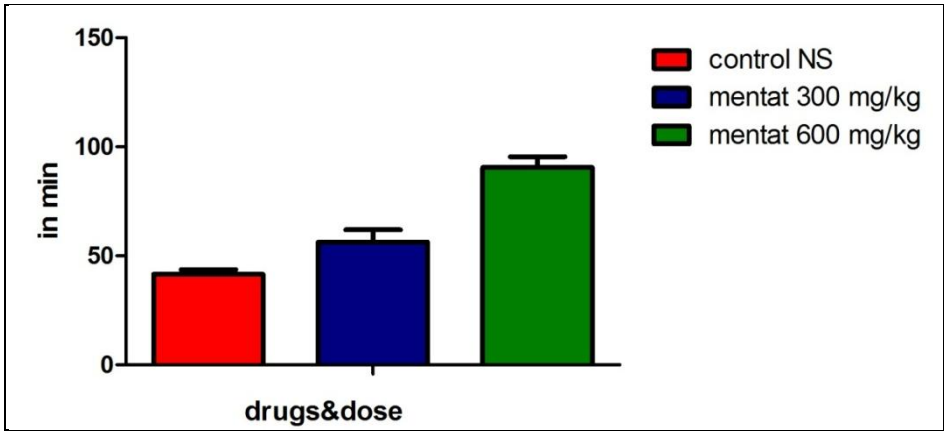

Fig 2:Duration of sleep

IV. Discussion

Mentat has sleep promoting effect for which they can be used as an adjuvant in the treatment of insomnia. GABAergic system is known to play a role in sleep and its related problems.[9] In our study we used diazepam induced sleeping time, the method described by Beretz et al. (1978) and modified by Rakotonirina *et al.* (2001). In this study the interval between loss and recovery of rightening reflex was used as the index of hypnotic effect.

In our study mentat 600mg/kg significantly decreased the onset of diazepam induced sleeping time as compared to control group. Mentat exhibited significant hypnotic activity when compared to control group in a dose dependent manner.

Our study was supported by Anil kumar et al (2004).They stated that mentat shortened the sleep latency and prolonged the total sleep time as compared to control. They observed that on combining triazolam or alprazolam with mentat, there is significant potentiation of total sleep time of mentat which shows that it may act through GABAergic modulation. It does not potentiate the effects of zolpidem or melatonin as these agents may have other mechanism besides GABAergic modulation.[10]

These observations suggest that mentat can be used along with other GABAergic hypnotics for the treatment of insomnia which causes decrease in the dose of other hypnotics, thereby decreasing the side effects.

V. Conclusion

Mentat showed increase in the duration of diazepam induced sleeping time and decreases the time to the onset of sleep. This shows that mentat can be used in the treatment of insomnia. Traditional medicines have been used to decrease the suffering of human beings since long time. Despite their wide spread usage traditional medicines have not been evaluated scientifically with regard to their safety, efficacy and has many limitations. However, our findings if substantiated by further experimental and clinical studies on the sleep promoting effect of mentat will be fruitful in development of newer compounds (plant products) which are safe and have minimal adverse drug effect.

References

[1]. Morin, Charles M. "The Nature of Insomnia and the Need to Refine Our Diagnostic Criteria". Psychosomatic Medicine 2000;62 (4): 483–485.
[2]. Anita Verma and Kulkarni S K. Pharmacological profile of BR-16A (mentat). Probe 1995; 34(2): 124-39.
[3]. Anil kumar, kulkarni S K. Effect of BR-16A(mentat),a polyherbal formulation on drug induced catalepsy in mice. Indian journal of Experimental Biology 2006 ;44:45-48.
[4]. Kulkarni S K, and George B. Pentylenetetrazol-induced kindling in Animals: Protective Effect of BR-16A. Indian Journal of Experimental Biology 1995; 33: 424-427.
[5]. Kulkarni S K and Anita Verma. Protective Effect of Mentat (BR-16A) A Herbal Preparation, on Alcohol Abstinence-Induced Anxiety and Convulsions. Indian Journal of Experimental Biology. 1993; 31: 435-440.
[6]. Kulkarni S K., Verma A. Evidence for nootropic effect of BR-16A (Mentat), a herbal psychotropic preparation in mice. Indian J Physiol Pharmacol 1992; 36: 28-34.
[7]. Rakotonirina, S V, Ngo Bum E , Rakotonirina A and Bopelet M . Sedative Properties of the decoction of the rhizome of Cyperus articularis. Fitoterapia 2001; 72: 22-29.
[8]. Curran-Everette D, Benos DJ. Guidelines for reporting statistics in journals published by the American Physiological Society. Am J Physiol Regular Integr Comp Physiol 2004;287:247-249.
[9]. Lancel M , role of GABAA receptor in regulation of sleep; initial sleep responses to peripherally administered modulators and agonist, sleep, 22(1999)25.
[10]. Anil Kumar and Kulkarni S K. On the sleep promoting effect of mentat: interaction with GABAergic modulators. Indian Journal of Experimental Biology. 2004;42: 448-451.