

Preclinical Evaluation of *Remusatia Vivipara* Leaves Extracts On Haloperidol Induced Catalepsy In Experimental Animals

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ABSTRACT

Remusatia vivipara (RV) found throughout in hilly region and used in folk medicine to treat whooping cough and used for wound to dispel any worms and germs. The present study was undertaken to investigate effect of RV on haloperidol induced catalepsy in mice. The effect of deferent doses (100 and 200 mg/kg) of various extract i.e. Ethanolic, Chloroform and ether extract of leaves of RV was studied on haloperidol (1 mg/kg, i.p.) induced catalepsy using bar test. The result indicated that haloperidol induced catalepsy was significantly for ethanolic and chloroform extract.

KEYWORDS: *Remusatia vivipara*, catalepsy, haloperidol, Neuroleptics.

INTRODUCTION

Nature is the best source of medicinal constituents. From the vast natural resources, the plants are being used for therapeutic purposes from the beginning of the civilization [1]. *Remusatia Vivipara* (Roxb) Schott is a very rare plant belonging to the family Araceae. Plant *Remusatia Vivipara* (Roxb) Schott is commonly known as Hitchhiker Elephant Ear. By tribal people in the region of Nandurbar District, Maharashtra. Locally it is known as 'Lalkand'. [2,3] Mainly its leaves and leaves are edible, also the leaves are used as folk medicine for treating inflammation and arthritis [3]. Leaves *Remusatia Vivipara* were used as analgesic, on the wound to dispel any worms and germs, for disinfecting genitourinary tract and for promoting

conception, in Whooping cough, For treatment of reddish boils [4,5]. It also has analgesic and anti-inflammatory effect [3, 6]. Although several medicinal uses reported for *Remusatia Vivipara* but no research persuades its central nervous system activity (CNS). Hence, to initiate and exert a pull on CNS activity of *Remusatia Vivipara*, we evaluate cataleptic activity of *Remusatia Vivipara*.

MATERIALS AND METHODS

Plant Material

The fresh leaves of *Remusatia Vivipara* Roxb. (Araceae) were collected from Nandurbar district Maharashtra in the month of July-Aug and It was Identified and authenticated by Dr. G.S Chaudhari, Department of Botany, M.J. College Jalgaon. A voucher specimen of the

leaves itself is deposited in department for future reference.

Extraction by Using Soxhlet Apparatus (Continuous Hot Extraction)

The leaves of *Remusatia Vivipara* were oven-dried at 45°C. Then it was powdered in grind mill. The powdered drug was passed through sieve no.22 to get uniform practical size. The powder was defatted with petroleum ether (60-80°C). Then successively extracted with chloroform and ethanol by using soxhlet apparatus ^[7,8]. The extract was dried under reduced pressure using a rotary vacuum evaporator, The dark green extract so obtain were kept in refrigerator for further use.

Animals

Adult male albino mice weighing 25-30gm (bred in our animal house, Shree Sureshdada Jain institute of pharmaceutical education and Research, Jamner, India) were used for study. Animals were housed under a standard 12 h: 12 h light dark cycle and were provided with food and water ad libitum. Animals were acclimated to laboratory condition before testing. Each animal was used once. The experiments were performed between 10.00 and 16.00hrs. The experimental protocol was approved by the institutional animal ethics committee and the study was conducted according to CPCSEA guidelines for the use and care of experimental animals.

Drugs

The haloperidol (RPG Life Sciences, India) and various extract of *Remusatia Vivipara* were dissolved in saline. The haloperidol and EA administered i.p. and orally respectively at volume of 10 ml/kg.

Catalepsy Evaluation

The animals were divided into three groups (n=5). Group I served as Control (Haloperidol 1mg/kg, i.p.), Group II and Group III treated with EA 100 mg/kg p.o. and 200 mg/kg p. o. respectively. Catalepsy was evaluated according to the standard bar hanging procedure by placing the animals with both forelegs over a horizontal glass bar (0.5 cm o.d.), elevated 4.5 cm from the floor ^[9]. The time the mouse maintained this position was recorded for up to 300 s; after three attempts the animal was replaced in cataleptic position. Catalepsy was considered finished when the forepaw touched the floor or when the mouse climbed the bar. Measurement was performed 30 min after saline, vehicle or extract administrations.

Statistical Analysis

All the data shown as mean \pm SEM. Statistical Analysis was performed with one way ANOVA followed by Dennett's test. Differences of $p < 0.05$ considered as statistically significant.

RESULT AND DISCUSSION

Typical Neuroleptics agents such as chlorpromazine, haloperidol, reserpine induced

a cataleptic state in rodents which is widely used as a model to test the extrapyramidal side effects of antipsychotic agents. Neuroleptic-induced catalepsy has been linked to a blockade of post synaptic striatal dopamine D₁ & D₂ receptor.^[9] despite this evidence, several other neurotransmitters such as acetylcholine, serotonin, angiotensin, adenosine or opioids have also been implicated in the catalepsy induced by neuroleptic agents^[10].

The present result represents in **Figure 1**, the effect of *Remusatia vivipara* leaves extracts as cataleptic property in mice. Haloperidol induced catalepsy is one of the animal models for testing extrapyramidal side effects of antipsychotic drugs. Haloperidol is thought to induce catalepsy through the blockade of dopamine receptors in the striatum and nucleus accumbens. In our present study we observed that the various extracts enhanced duration of catalepsy in mice. Ethanolic extract at the dose of 200mg/kg shows increases in the cataleptic response. While Chloroform extracts also enhance the cataleptic property of Haloperidol in mice.

Furthermore, the catalepsy state may be modulated by drugs that modify the serotonergic or adenosinergic neurotransmitter systems. Thus, the cataleptic activity of *Remusatia vivipara* might be associated interacting with dopaminergic, serotonergic, adenosinergic or GABAergic neurotransmitter systems. The results obtained in the present study require further investigation to elucidate the catalepsy induced by using various extracts.

CONCLUSION

The various extracts of *Remusatia vivipara* potentiate haloperidol induced catalepsy in mice. This could potentially cause an adverse effect such as an increase in extra-pyramidal side effects of neuroleptic drugs or beneficial such as improving the therapeutic response in psychiatric patients. So, it may act by blocking dopaminergic receptors or other receptors. Furthermore, specific preclinical investigations are needed for selecting a target site as neuroleptics treatment. This plant will be a good candidature in a Neurological treatment.

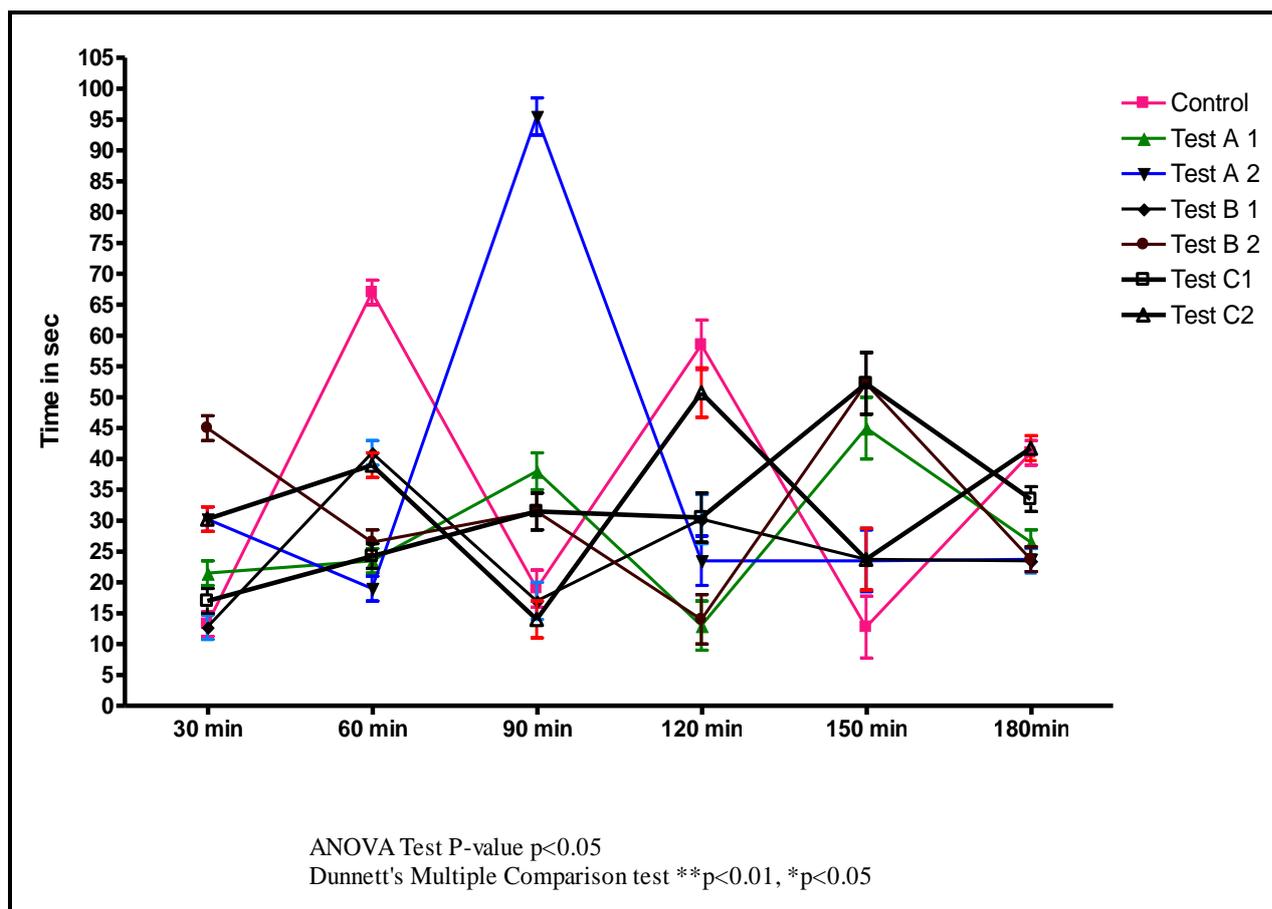


Figure 1: Effect of *Remusatia vivipara* extract on haloperidol induced catalepsy in mice n = 6;

The differences in means are significant at $P < 0.05$.

Test A1: Ethanolic Extract 100mg/kg

Test A2: Ethanolic Extract 200mg/kg

Test B1: Ether Extract 100 mg/kg

Test B2: Ether Extract 200mg/kg

Test C1: Chloroform ext 100 mg/kg

Test C2: Chloroform ext 200 mg/kg

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