

## Study on Muscle relaxing potential of Ethanolic Extract of Stem Bark of *Bauhinia purpurea* (L) Plant in Albino mice

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**Abstract:** Neuropharmacology is the study of how drugs effect cellular function in the nervous system, and the neural mechanisms through which they influence behavior of human beings, i.e how these drugs addiction affect the human brain. In this present study, the aim is to study the Neuropharmacological activities of Ethanolic Extract of Stem Bark of *Bauhinia purpurea* (L) Plant in mice by Actophotometer method and also muscle relaxing property by rotarod method, thereby study of CNS depressant activity and Antianxiety property by *Bauhinia purpurea* (L) plant. [1].

**Keywords:** *Bauhinia purpurea* (L) stem bark extract, Diazepam, Rotarod, CNS depressant activity, locomotor activity

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### I. Introduction

*Bauhinia purpurea* (F: Caesalpinaceae) is a normal herb to broad evergreen shrub, widely distributed in India [1]. The plant is presently being used for ailments such as sores, wounds, diarrhea, dropsy, pain, rheumatism, convulsions, delirium, septicemia [2]. Phytochemical investigation have revealed the presence of alkaloids, traces of steroids, terpenoids etc. The plant is also reported to contain Flavonoids (Quercetin, quercetol, catechol, kaempferol etc.). The presence of bioactive compounds indicates the medicinal value of the plants [3]. Hence the present study is focused on the evaluation of neuropharmacological activities of ethanolic extract of *Bauhinia purpurea* (L) plant in animal models.

The skeletal muscle relaxations together with taming or calming effect these agents reduce anxiety and stress. The loss of a muscle grip is an indication of relaxation of muscles. This effect is studied in test animals using Rotation rods. [3]

### II. Methods And Materials

#### 2.1 Plant material

Fresh dried stem barks were procured from young matured plants in local areas of Davanagere district, Karnataka, India. The plant was authenticated by taxonomist of botany department of DRM Science College, Kuvempu University, Davanagere, India. Dried stem bark were powdered to get a coarse powder.

#### 2.2 Preparation of extract

The Coarse powdered material was subjected to soxhlet extraction with various solvents like petroleum ether (60-80°C), chloroform, ethanol (95%) and distilled water [4][5]. The ethanolic extract were dried and preserved in a desiccators for further screening. Further crude ethanolic extract was subjected for animal testing.

#### 2.3 Animals used

Adult mice (25-30g) of either sex were used. The selected animals were kept in standard polypropylene cages at room temperature around 25-30°C with water and libitum. Experiments were performed after keeping for an overnight fast.

### 3 Experimental

#### 3.1 Study on (CNS depressant property) locomotor activity of mice using Actophotometer

A) Behavioral assessment:

The effect of ethanolic extract of *Bauhinia purpurea* stem bark at 50mg/kg and 100mg/kg was assessed as per the method described by Kulkarni s.k (1999) [6]. The albino mice were divided into three groups

(n=6).After treatment with stem bark fraction of *Bauhinia purpurea* (L), the animals were observed for gross behavioral assessment after administration from 30 min for three hours. The observed parameters are includes CNS depressant effect associated with decreased locomotor activity.

**B] Procedure:**

The test animals were weighed and numbered. The equipment Actophotometer was turned on and individual mouse was placed in the activity cage for 10min.The basal activity score of all the animals were noted. Later the standard diazepam was injected and after 30 min retest was done on each mouse for activity scores for 10 minutes. Inject the drug (extract) of 50mg/kg of *Bauhinia purpurea* (L) stem bark for other set of animals. The activity score was noted. Similarly test is repeated with the increased dose of 100mg/kg. Further the difference in the activity before and after drug injection was noted and % decrease in locomotor activity was calculated. Results are indicated in table 1 and fig 1.

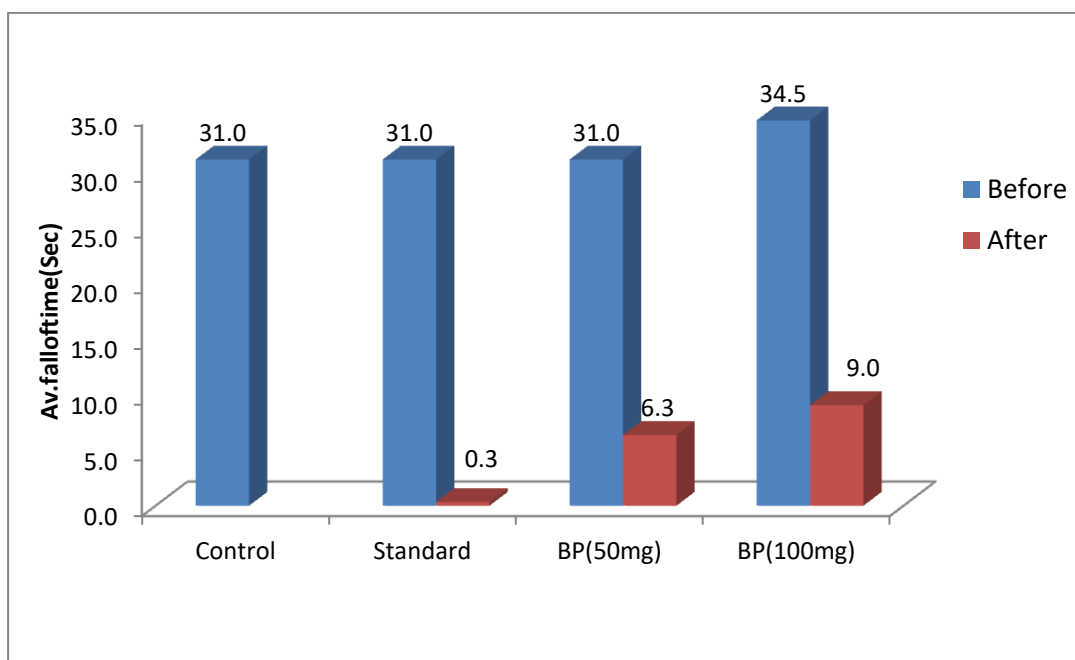
**3.2 Rotarod test for Antianxiety activity**

One of important pharmacological actions of *Bauhinia purpurea* drug is antistress/antianxiety activity, whichin turn shows muscle relaxing property.Rotarod test is used to assess the effect of drugs on the motor coordination. The loss of a muscle-grip is an indication of muscle relaxation [5].In the present method, animals were weighed and numbered. Rotarod was turned on and the appropriate speed was selected. Animal were placed one by one on the rotarod. The fall off time was noteddown when mouse falls from the rotating rod. A untreated mouse was found to fell within 3-5min.also fall off time was noted for the diazepam injected group. Similarly drug with 50mg/kg and 100mg/kg body weight was injected for group III and IV animals.Fall off time was noted. Ultimately animals resisted the falling from rotarod after the drug treatment shows muscle relaxation property of drug.The results are indicated in table 2 and fig 2.

**III. Results And Discussion**

**Table: 1**Effect of ethanolic extract of *Bauhinia purpurea* on locomotor activity[Actophotometer Method]

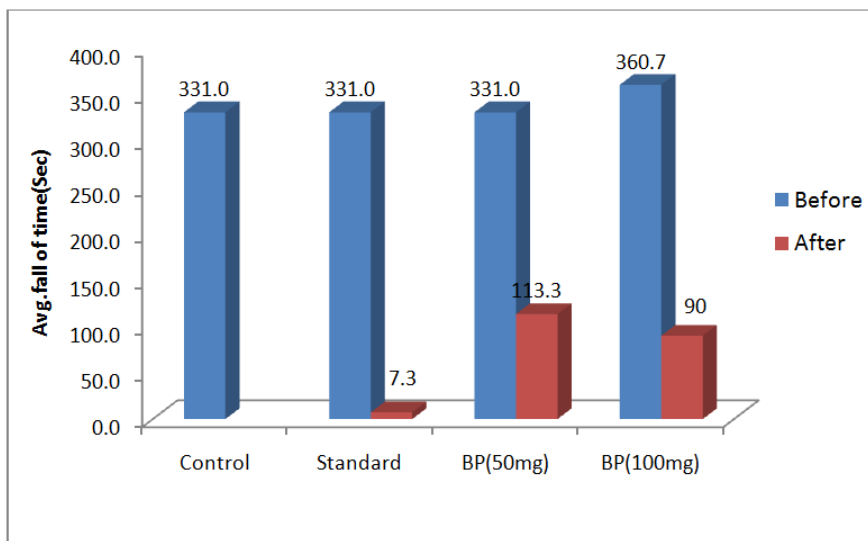
Effect of ethanolic extract of <i>Bauhinia purpurea</i> on locomotor activity[Actophotometer Method]				
Groups	Avg Fall of Time(sec) ±SEM			
	Before	After	Difference	% decrease
Control	31.00±1.10	-	-	-
1.Standard	31.00±1.10	0.33±0.21	30.67	98.9
2.BP(50mg/kg..p.o)	31.00±1.10	6.33±0.88	24.67	79.8
3.BP(100mg/kg..p.o)	34.50±1.48	9.00±2.53	25.50	74.0
One Way ANOVA F = 6.25, P= 0.011 , S (P < 0.05)				



**Fig. 1: Actophotometer Method**

**Table 2: Antianxiety activity of Bauhinia purpurea by Rotarod Method**

Effect of ethanolic extract of <i>Bauhinia purpurea</i> on motor coordination [Rotarod method]				
Groups	Avg Fall of Time(sec) ±SEM			
	Before	After	Difference	% decrease
Control	331.0±60.7	-	-	-
1.Standard	331.0±60.7	7.3±1.1	323.7	97.4
2.BP(50mg/kg.,p.o)	331.0±60.7	113.3±32.8	217.7	65.9
3.BP(100mg/kg.,p.o)	360.7±43.5	90.0±27.9	270.7	76.2
One Way ANOVA F = 1.28, P = 0.31, ns (P > 0.05)				



**Fig.2:** Muscle relaxation activity of (drug) ethanolic extract of stem bark of *Bauhinia purpurea* (L)

In the locomotor activity, which was assessed by an Actophotometer, in which mice or rats were used for screening [8][9]. By performing this experiment, the drug showed the decrease in locomotor activity which in turn revealed CNS depressant activity as in the table 1.

In this Rotarod method, the effect of drugs on the motor coordination (or) muscle relaxant activity on mice was assessed [8]. The difference from the fall off time from the rotating rod between control, standard (Diazepam) and drug (Ethanolic extract) treated animals is taken as an index of muscle relaxation. Test was performed after half an hour of administration of drugs and time falling of animals from rotating rod were recorded.

Statistical analysis was done by using one way analysis variance (ANOVA) followed by student's test.

#### IV. Conclusion

In the present study, it was noted that the Ethanolic extract of stem bark of *Bauhinia purpurea* [L] has a significant. An association of CNS depressant thereby decreased locomotor activity with ethanolic extract of stem bark of *Bauhinia purpurea* (L) plant. By performing the Rotarod experiment, the drug used revealed decreased muscle grip strength of mice on rotarod apparatus. Hence in the present study, Ethanolic extract of the plant *Bauhinia purpurea* (L) used as drug which has locomotory activity and Muscle relaxant property. Thereby revealed excellent neuropharmacological potency.

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