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Effect of *Echium amoenum* (Gol-gav-zaban) on Motor Coordination in Rat During Two Treatment Courses

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Abstract: *Echium amoenum* belongs to the Boraginaceae family and is a biennial and perennial herb indigenous to the narrow zone of northern part of Iran and Caucasus. The flowers and leaves of this plant are used medicinally as ant febrile, anti-depressive, for the treatment of stress, laxative and anxiolytic. In this study we prepared an aqueous extract from dried petals of this botanical in 125 mg kg^{-1} concentration (effected dose on anxiety on basis of other researches) and tested the effect of extract on motor coordination in Rat as compared with diazepam 1 mg kg^{-1} as sedative and synthetic drug. Rotarod apparatus used in this study. The experiment did during 15 and 30 days. Statistical analysis of the latency to fall from the rotarod revealed that intraperitonealy administration of *E. amoenum* in 125 mg kg^{-1} and diazepam 1 mg kg^{-1} produced motor in coordination in 15 days but motor coordination in 30 days compared to control group.

Key words: *Echium amoenum*, Aqueous extract, Motor coordination, Rotarod

INTRODUCTION

Echium amoenum (Boraginaceae) is one of the important medicinal plants in Iranian traditional medicine (Hooper, 1937; Zargari, 1996). Petals of *E. amoenum* have been advocated for variety of effects such as demulcent, anti-inflammatory and analgesic, especially for common cold, anxiolytic and sedative in folk medicine of Iran (Hooper, 1937; Shafaghi *et al*., 2002; Zargari, 1996). The phytochemical studies on *E. amoenum* revealed the presence of many chemicals such as flavonoids, saponins and unsaturated terpenoids and sterols (Salehzadeh, 1990). In the present study we have investigated the effect of aqueous extract in 125 mg kg^{-1} concentration from petals of *Echium amoenum* as compared with single dose of diazepam (1 mg kg^{-1}) during 15 and 30 days treatment courses, on motor coordination by the Rotarod apparatus in Rat. Bijan Shafaghi used aqueous extract of *Echium amoenum* in dose range 62.5, 125, 250 and 500 mg kg^{-1} and revealed that anxiolytic effect of extract was most evident in 125 mg kg^{-1} group. About diazepam, they tested in dose range (0.25, 0.5, 1, 2 mg kg^{-1}) and showed that 1 and 2 mg kg^{-1} increased open arm entries and time spending in open arm on elevated plus maze model of anxiety, respectively. On the basis of the above facts, we used these doses to understanding the effect of extract during 15 and 30 days treatment courses on motor coordination in Rat by rotarod test. Loss of coordination motor movement is one of the pharmacological effects of anxiolytic drugs (Tusda *et al*., 1996).

MATERIALS AND METHODS

Plant and extract: An aqueous extract (pH = 6) of dried flowers was used in this study. *E. amoenum* flowers were collected from Salmas district, Iran. Flowers of this plant were separated and dried naturally on laboratory benches at room temperature (22-24°C). The plant materials were powdered and exhaustively extracted with distilled water in a Soxhlet apparatus under reduced pressure. After evaporation of the solvent in rotary evaporator and then in oven at 40°C, the residue was diluted with saline to obtain 125 mg kg^{-1} concentration.

Animals: Eighteen Male Wistar Albino Rats (180-200 g; Faculty of Science; Urmia University) were used. Animals were housed in groups of six, under a standard 12 h light/dark cycle in room maintained at 22±4°C with free access to food and water. All the experiments were performed from 9 a.m. to 11 a.m.

Rotarod: Loss of coordination motor movement is one of the pharmacological effects of anxiolytic drugs. The effect of the plant extract on coordination motor movement was assessed using rotarod test (Tusda *et al*., 1996). Animals were injected by extract and diazepam and saline intraperitunealy for 15 and 30 days. Thirty minute after last injection, animals were placed in apparatus and latency to drop off the rotarod was recorded up to limit of 100 sec.

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Data analysis: The data were analyzed using Analysis of Variance (ANOVA). Means were separated by using the Tukey Multiple Test at p = 0.05. Values are the mean±SE of six replicates.

RESULTS AND DISCUSSION

Loss of coordination motor movement is one of the pharmacological effects of anxiolytic drugs. The effect of the aqueous extract of *Echium amoenum* on coordination motor movement, was assessed using rotarod test. Data analysis showed that in the first treatment course (15 days treatment) motor in coordination happened because the latency to drop off the rotarod reduced but in the second course (30 days) also shows in Table 1 and Fig. 1, we observed increasing in the latency and it means that motor coordination happened (Table 1 and Fig. 1). So the extract in 125 mg kg^{-1} had no bad effect on motor coordination and it can use for anxiety disorders (Table 2).

Table 1: Table of Analysis of Variance (ANOVA) of the effect of *E. amoenum* extract on motor coordination during 15 and 30 days treatment compared with diazepam

S.O.V	df	MS	SS	F	P
Replication	5	2316.5	11582.9	1.36	0.272 ns
Time	1	1356.6	1356.6	0.796	-
Concentration	2	413	826.1	0.242	-
Time×con.	2	2246.1	4492.3	1.31	0.285 ns
Error	25	1702.5	42564.5		
Total	35	-	60822.7		

ns = Non Significant

Table 2: Comparison of *E. amoenum* 125 mg kg^{-1} with diazepam 1 mg kg^{-1} on coordination

	Treatment groups		
Time	Control	Diazepam	*E. amoenum*
15	75.33±15.9a	52.33±14.1a	51.5±22.1a
30	34.0±11.8a	65.33±21.1a	43.0±16.5a

Same samples aren't significant in p<0.05 in Tukey MRT

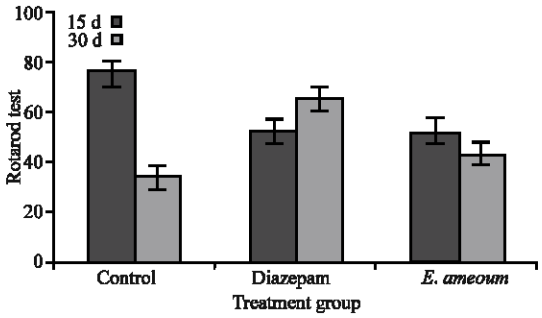

Fig. 1: Diagram of the effect of *E.amoenum* extract on motor coordination during 15 and 30 days treatment

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