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Research Article

Evaluation of Anti-Depressant Activity of Hydro Alcoholic Extract of Triticum Aestivum

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ABSTRACT

The present study was designed to screen anti-depressant activity of Hydro alcoholic extract of Triticum Aestivum using Chronic models (14 day study) of Tail suspension test (TST) and Forced Swim Test (FST) in Swiss Albino rats. Wheat grass were collected and authenticated. Extraction of dried wheat grass was carried out using a Soxhlet apparatus to obtain its Hydro alcoholic extract. The extract of Triticum Aestivum showed the significant anti-depressant activity comparable to the standard drug. The oral administration of Triticum Aestivum extract at doses 200 mg/kg & 400 mg/kg respectively as compared to the control treated group showed an anti-depressant activity comparable to that of standard drug. The anti-depressant effects of Triticum Aestivum extract seem to be mainly associated with the activation of dopaminergic system and possess potential anti-depressant activity.

Keywords: Anti-Depressant, Triticum Aestivum, serotonin re uptake inhibitors

INTRODUCTION

Depression is a heterogeneous disorder that affects a person's mood, physical health and behaviour. Anti-depressant drugs such as tricyclic anti-depressants and selective serotonin re uptake inhibitors (SSRI) are used to treat depression showing various side effects and thus, the search for a new anti-depressant without side effects is deemed important.

OBJECTIVES: Triticum Aestivum (Poaceae), commonly known as wheat grass, has pharmacological diversities as anti-cancer, antioxidant, antifungal and anti-hyperglycemic activities. In continuation of our research on Triticum Aestivum, we have investigated the probable mechanisms of anti-depressant-like activity of Triticum Aestivum in behavioural models of depression using laboratory rats, for the management of depressive orders.

EXPERIMENTAL METHODS

1. COLLECTION AND PREPARATION OF EXTRACT: Fresh juice of wheat grass was prepared by standard procedure described by Wigmore, 1985. The powder obtained after drying wheat grass juice is subjected for extraction with methanol and water in the ratio of 30:70 respectively using Soxhlet apparatus.

2. ANIMALS: Adult male Swiss Albino rats, weighing approximately 150-200g were used and all the procedures in the study were performed in accordance with the Institutional animal ethics committee as per the guidelines laid by CPCSEA.

3. GROUPING: Animals were divided into 4 groups, each group consisting of 6 rats

GROUP 1: Received no treatment and served as control,1% gum acacia(10ml/kg).

GROUP2: Received test drug Triticum Aestivum (200mg/kg) per orally.

GROUP3: Received test drug Triticum Aestivum (400mg/kg) per orally

GROUP4: Received standard drug i.e., Imipramine (10mg/kg).

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PROCEDURES

ACUTE DERMAL TOXICITY- FIXED DOSE PROCEDURE:

The acute dermal toxicity study was carried out in adult female albino rats by 'fix dose' method of OECD (Organisation for economic co-operation & development) guideline no. 434 at dose levels 200-2000mg/kg.

FORCED SWIM TEST (FST): Behavioural despair was proposed as a model to test anti-depressant activity by Porsolt et.al. rats were forced to swim individually in glass jar (25*12*25 cm^3) containing fresh water of 15cm height, after an initial 2 minute period of vigorous activity, each animal assumed a typical Immobile posture[1].

TAIL SUSPENSION TEST (TST): Rats were suspended on the edge of a table 75cm above the floor by adhesive tape placed approximately 1cm from tip of the tail. Immobility time was recorded during a 6 min period, when it did not show any movement of the body and hanged passively [2].

RESULTS AND DISCUSSION

Triticum Aestivum (200& 400 mg/kg) significantly ($p<0.01$) and dose dependently decreased the Immobility time as compared to control rats (table1). The extent at the dose of 400 mg/kg showed the almost same activity as Imipramine ($p<0.01$), in decreasing Immobility period. It has been argued that the TST is less stressful than FST and has greater pharmacological sensitivity [3]. Remarkably, TST detects the anti-Immobility effects of a wide array of anti-depressants TCA, SSRI, MAOI, electro convulsive shock and even atypical anti-depressants. Thus, the activity of Triticum Aestivum could involve one of the mechanisms for the established agents as described above.

TABLE1: Effect of Triticum Aestivum on duration of Immobility time in the Chronic Study (14days) of tail suspension test (TST) and forced swim test (FST) using rats.

GROUP	DOSE(mg/kg)	(s), TST DURATION OF IMMOBILITY	(s), FST DURATION OF IMMOBILITY
1% Gum Acacia	(10ml/kg)	181.5±4.82	166.5±2.76
Triticum Aestivum	200	149.3±2.73**	143.8±1.62*
Triticum Aestivum	400	132.2±0.46**	120.2±0.30**
Imipramine	10	130.3±4.15**	117.3±1.55**

Values represented: Mean±SEM (n=6), * P<0.05, **P<0.01 vs..control.

CONCLUSION

From the above valuable animal study, we conclude that the plant extract Triticum Aestivum show a significant anti-depressant activity in Tail Suspension Test(TST) and Forced Swim Test(FST) models of depression. Thus, we can say that Triticum Aestivum significantly reduces the Immobility Period in both Tail Suspension Test (TST) and Forced Swim Test (FST).

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