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Phytochemical investigation and pharmacological screening of leaves of *Achyranthus aspera* Linn. as analgesic and antipyretic

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ABSTRACT

Achyranthus aspera Linn. leaves have antimicrobial, anti-inflammatory, venereal affection, analgesic, antipyretic activity, in treatment of eyes, arthritis as antiirlityetc. Methanolic extract of leaves of *Achyranthus aspera* Linn. reported as analgesic activity but leaves till not reported, the effect of alcoholic extract and its various fraction as Petroleum ether, Ethyl acetate, Diethyl ether, n-Butanol were tested for phytochemically which contain glycosides, flavonoids, tannins, amino acids. As analgesic activity by using hot plate method and antipyretic by using brewers yeast induced method and compare with Aspirin as a standard in a dose of [25mg/kg] for analgesic and [125mg/kg] for antipyretic effect.

Key words: Leavess of *Achyranthus aspera* Linn., Analgesic activity by hot plate, and Antipyretic activity by Brewers yeast suspension, Aspirin.

INTRODUCTION

Achyranthus aspera Linn. [Amaranthaceae] is grown in India, in sub tropical parts of India. Western Himalayas. It is known as Prickly chaff flower in English, Chirchira in Hindi, Aghada in Marathi[1]. Dried leaves used in venereal affection, anti-inflammatory, purgative[2], as tonic, The methanolic extract of leaves of Achyranthus aspera Linn.. reported to have analgesic activity but leaves till not reported the effect of alcoholic extract and its various fraction as Petroleum ether, Ethyl acetate, Diethyl ether, n-Butanol The aim of study was to screen effect of leaves of *Achyranthus aspera* Linn. as Analgesic and Antipyretic[4].

MATERIAL AND METHODS

The fresh leaves of *Achyranthus aspera* Linn. were collected. They were shade dried and ground to obtained coarse particles size. The powdered material was extracted with (95%) alcohol in a continuous hot extractor at 40^0-50^0c temps. Some part of the extract was kept aside and remaining was fractionated with Pet. ether, Ethyl acetate, Diethyl ether, and n-Butanol what ever the fraction collected was wash with water air dry and kept separately with Na_2So_3 ad dehydrating agent.[5] Qualitative test were performed for the alcohol extract and its fractions alcohol extract showed the presence of glycosides, amino acids, and sterols. Pet. Ether extract showed presence of fats and oils [6,7]

Evaluation of analgesic and antipyretic activity

Hot plate method

In this method Wister male albino rats (180-200gm) were used for the study. The animals were segregated into seven groups of six animals each.

Group 1 - Normal saline solution,

Group 2 - Aspirin as standard (25mg/kg),

Table 1: Showing result of analgesic effect of Alcohol extract and its fractions of leaves of *Achyranthus aspera* Linn. on Hot plate method

S. No.	Time in min	Control (vehicle)	Aspirin	Alcohol extract	Pet.ether extract	Solvent ether fraction	Ethy lacetate fraction	n-Buthanol fraction
1	0	2.00±0.15	2.80±0.15 (4.44%)	2.6±0.18 (3.35%)	2.4±0.21 (2.27%)	2.3±0.17 (2.22%)	2.4±0.21 (2.27%)	2.4±0.13 (2.23%)
2	20	2.25±0.11	7.21±0.63 (28.38%)	6.80±0.35 (25.63%)	6.42±0.50 (23.84%)	4.30±0.60 (11.54%)	5.00±1.23 (15.49%)	6.20±0.70 (22.25%)
3	60	1.50±0.07	8.19±0.74 (36.21%)	7.99±0.22 (35.13%)	6.49±0.60 (27.02%)	6.14±0.55 (25.13%)	5.30±1.25 (20.54%)	7.49±0.71 (32.43%)
4	90	1.50±0.22	10.9±1.16 (50.8%)	8.93±0.63 (40.17%)	7.58±0.61 (34.32%)	7.17±0.70 (30.65%)	5.40±1.07 (21.08%)	7.46±1.14 (34.25%)

Table 2: Showing result of antipyretic effect of Alcohol extract and its fractions of leaves of *Achyranthus aspera* Linn. by Brewers yeast induced pyrexia method

Group	Rectal Temp °C		Time after medication in min				
	Initial	18 hr after Yeast injection	30 min	60min	90min	120min	180min
Control	38.30±0.031	39.35±0.025	39.30± 0.015	39.23± 0.025	39.20± 003	39.15±0.038	39.00±0.02
Aspirin 150 mg/kg	38.30±0.073	39.35±0.077	38.37± 0.025	38.09± 0.015	37.67±0.053	37.58± 0.058	37.40±0.47
Alcohol 30mg/kg	38.28±0.022	39.37±0.038	38.43± 0.022	37.87± 0.060	37.43±0.044	37.30± 0.038	37.30±0.38
Pet ether 100mg/kg	38.25±0.058	39.39±0.080	38.68± 0.051	38.00± 0.065	37.88±0.057	37.70± 0.074	37.68±0.72
Solvent ether300mg/kg	38.27±0.065	39.40±0.012	38.80±0.17	38.60± 0.11	38.40±0.096	38.05± 0.10	38.00±0.7
Ethyl etate. 300 mg/kg	38.24±0.080	39.38±0.10	38.67±0.13	38.50± 0.069	38.40±0.086	38.35± 0.080	38.30±0.85
n-Butanol 300mg/kg	38.26±0.065	39.40±0.051	38.75± 0.11	38.61± 0.060	38.58±0.065	38.40± 0.052	38.37± 0.072

Group 3 - Alcohol extract (30mg/kg)
Group 4 - Pet ether fraction (100mg/kg),
Group 5 - Ethyl acetate fraction (300mg/kg),
Group 6 - Diethyl ether fraction (300mg/kg),
Group 7 -n-Butanol fraction (300mg/kg).

The dried extract and its fraction were formulated as a suspension in distilled water. Alcoholic extract and its various fraction were administered orally using intragastic tube. The pain threshold (No. of liking of paw/jumping) were measured at 20, 60, 90 min after administration of standard and test solution [6,710.]

Antipyretic activity

In this method Wister male albino rats (180-200gm) were used for the study. The animals were segregated into seven groups of six animals each. The standard and test group were fevered by brewers yeast suspension in propylene glycol [15%] at a dose of 10 ml/kg.

Group 1 - Normal saline solution,
Group 2 - Aspirin as standard (25mg/kg),
Group 3 - Alcohol extract (30mg/kg)
Group 4 - Pet ether fraction (100mg/kg),
Group 5 - Ethyl acetate fraction (300mg/kg),
Group 6 - Diethyl ether fraction (300mg/kg),
Group 7 -n-Butanol fraction (300mg/kg).

The dried alcoholic extract and its various fractions were formulated as a suspension in distilled water. Alcoholic extract and its various fractions were administered orally using intragastic tube. The rectal temperatures were measured at 30, 60, 90, 120 and 180 min. after administration of standard and test solution[11].

RESULTS

Analgesic activity and Antipyretic activity

Amongst alcoholic extract and its various fractions of leaves of *Achyranthus aspera* Linn.

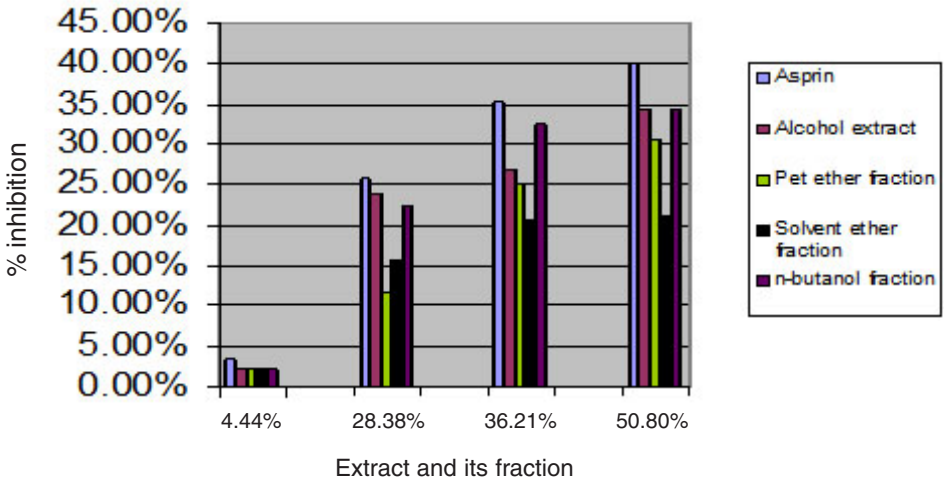

Fig. 1: Analgesic activity by Hot plate method

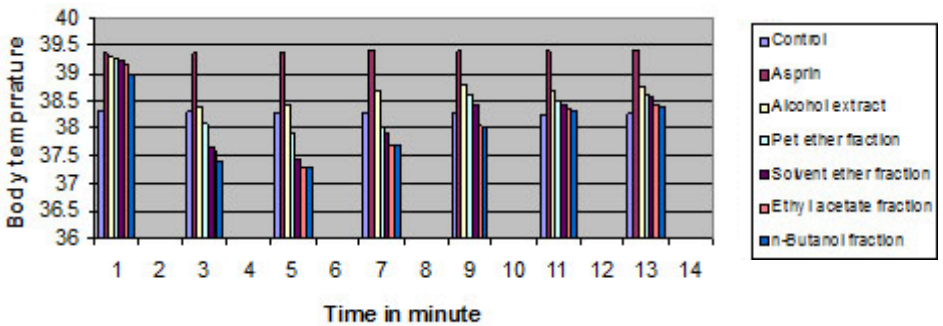

Fig. 2: Antipyretic activity by Brewers yeast induced supension method

alcoholic extract showed potent analgesic and antipyretic activity which is comparable to that of aspirin at the dose of 25mg/kg. For analgesic and 125mg/kg. for antipyretic activity the peak effect in alcohol extract and fraction of leaves of *Achyranthus aspera* Linn... were seen after 1h.in case of analgesic and 0.5h.in antipyretic treatment This could be due to more availability of saponin as active principle's in leaves.

DISCUSSION

From this study, it can be concluded that the leaves of *Achyranthus aspera* Linn.. possesses marked analgesic and antipyretic activity and is equipotent to standard drugs. The present study establishes effectiveness and pharmacological screening, rational for use of leaves of *Achyranthus aspera Linn.* in folklore medicine as analgesic drug. Thus the plant can be further explored for its phytochcmical profile to identify the active constituent saponin is responsible for the above mention activities.

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