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ANTIULCER ACTIVITY OF VARIOUS EXTRACTS OF LEAVES OF *INDIGOFERA TINCTORIA*

N. UMARANI*, K. ILANGO, P. VALENTINA, P. G. SUNITHA and K. ANANDARAJAGOPAL[a]

Department of Pharmaceutical Chemistry, SRM College of Pharmacy, SRM University, KATTANKULATHUR – 603 203 (T. N.) INDIA
[a]Department of Pharmaceutical Chemistry, Arulmigu Kalasalingam College of Pharmacy, KRISHNANKOIL – 626 190 (T. N.) INDIA

ABSTRACT

The antiulcer activity of the petroleum ether, chloroform, ethanolic and aqueous extracts of *Indigofera tinctoria* was studied on aspirin plus pylorus ligated model in rat. The results revealed that all the extracts exhibited significant antiulcer activity by decreasing the ulcer lesions.

Key words: Antiulcer, Ethanolic extract, *Indigofera tinctoria*, Ulcer index

INTRODUCTION

The plant *Indigofera tinctoria* is a small shrub known as Neelum. It is widely distributed throughout the plains of northern India especially Bengal, Bihar and Orissa[2]. It belongs to the family Papilionaceae[1]. The literature survey reveals that the plant has been used in the treatment of epilepsy, hepatitis[3], fever, and worm infection[4]. No other pharmacological activities have been reported on this plant. Hence, this study is aimed to find out the antiulcer activity of the leaf extracts of *Indigofera tinctoria.*

EXPERIMENTAL

Materials and methods

Plant material

The fresh leaves of *Indigofera tinctoria* were collected in Thirunelveli District in the month of October and authenticated by Dr. R. Muthukumar, B.S.M.S., Government

* Author for correspondence; E-mail: umaarun79@rediffmail.com

Siddha Hospital, Thirunelveli where a Voucher specimen (43) has been submitted.

Preparation of extract

The fresh leaves were dried in shade for 10 days. Then the leaves were made into coarse powder and extracted by Soxhletation with petroleum ether, chloroform, ethanol and water separately. The extracts were concentrated by vacuum evaporation. The preliminary phytochemical investigation[5,6] was carried out on petroleum ether, chloroform, ethanol and aqueous extract and results are tabulated in Table 1.

Table 1. Phytochemical investigation of various extracts of leaves of *Indigofera tinctoria*

Constituents	Extracts			
	Pet. ether	Chloroform	Ethanolic	Aqueous
Alkaloids	-	-	+	+
Carbohydrates	-	-	+	+
Glycosides	-	-	+	+
Phytosterols	+	-	-	-
Fixed oils and fats	-	-	-	-
Saponins	-	+	-	-
Tannins	-	-	-	-
Proteins and amino acids	-	-	-	-
Flavonoids	-	+	+	+

+ Present

- Absent

Animals

Healthy adult albino rats of either sex (100 – 150 g) were selected and they were kept under controlled conditions for one week prior to the experiment.

Antiulcer activity

The antiulcer activity on rat was studied by aspirin plus pyloric ligation model[7,8].

Thirty six healthy adult albino rats of either sex were selected and divided into six groups of six animals in each group. The animals were fasted for 24 hours with water and *ad libitum.* Preliminary screening was done to select the rats. Group I served as control, Group II received ranitidine (10 mg/kg/p.o.) and served as standard. Group III – VI received petroleum ether, chloroform, ethanol and aqueous extracts (100 mg/kg/p.o.), respectively. All the group animals received aspirin in 1% w/v CMC suspension (1 mL/ 100 g body wt.) orally. After four hours of pyloric ligation[9], the stomach was excised and inflated by injecting saline and fixed in 5 % formalin for 30 minutes. Then the stomach was cut open along the greater curvature and the inner mucosal membrane was examined for ulcer lesions by a 10X magnifier. Ulcer lesions were evaluated according to their dimensions. Ulcer score and ulcer index[10,11] was determined by students "t" test[12] and expressed as mean ± SEM.

Table 2. Antiulcer activity of various extracts of leaves of *Indigofera tinctoria*

Treatment	Dose (mg/kg)	Total area of stomach cm^2	Total ulcerated area cm^2	Ulcer score (Mean ± SEM)	Ulcer index (Mean ± SEM)
Vehicle control	-	7.13	2.56	2.0 ± 0.0	3.590 ± 0.358
Ranitidine standard	10	7.59	0.32	0.7 ± 0.27**	0.305 ± 0.012**
Pet. ether extract	100	8.32	1.242	1.4 ± 0.24*	1.492 ± 0.011*
Chloroform extract	100	8.25	1.802	1.2 ± 0.55*	2.184 ± 0.010*
Ethanolic extract	100	7.26	0.862	0.8 ± 0.42**	1.187 ± 0.001**
Aqueous extract	100	6.82	0.923	0.9 ± 0.22*	1.353 ± 0.026*

*$p < 0.001$ v/s control

RESULTS AND DISCUSSION

The various extracts of leaves of *Indigofera tinctoria* exhibit antiulcer activity in rat by aspirin plus pyloric ligation model in a dose dependent manner at the dose of 100 mg/kg body weight. The maximum activity was observed in animals administered with

100 mg/kg body weight of the test extracts as well as in those animals, which received ranitidine (10 mg/kg). All the extracts exhibited significant antiulcer activity by decreasing the ulcer lesions. Ethanolic extract exhibited more significant activity. On the basis of these results, it may be concluded that alcoholic extract in the dose tested justifies the usefulness of *Indigofera tinctoria* in the treatment of ulcer. This may be due to the presence of flavonoids in the ethanolic extract.

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