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EVALUATION OF VALERIANA WALLICHII ROOT EXTRACT FOR ANTI ULCER POTENTIAL IN EXPERIMENTAL ANIMAL

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ABSTRACT

The procedure for reducing ulcers by a wound caused by immersion in cold water, includes fasting animals 18-24 hours to the study. Wounds was formerly treated through interfuse individual animals in a closed cage and immersed into a water tank, (15 to 20°C) slowly but surely to a xiphoid level for 17 hours in the event of a "water-based model", or 24 hours into water cold as soon as using a "solid cool water model" or holding a cold air freezer at a temp of 2 to 3 °C intended for 2 to 4 hours in the case of a "cold pressure model" Appropriate treatment (car (2 ml/kg), Ranitidine (50 mg/Kg), V. wallichii root extract (200 & 400 mg/Kg) given orally twice for seven days. The results of this study concluded, Hydroalcoholic extract (200 mg/kg) was less effective compared with various parameters such as ulcer index, pH, total and free acid compared to standard (Ranitidine 50 mg/kg).

INTRODUCTION

PEPTIC ULCER

Peptic ulcer disease includes both stomach ulcers and intestinal ulcers that became a major threat to the world over the last two centuries with high morbidity and mortality (Shivani et al., 2014). The management of stress caused by peptic ulcer disease and its complications remains a challenge (Prabhu et al., 2014). Depression lesions are often associated with critically ill patients (Naguyen et al., 1996). The occurrence be contingent on the kind of repetition and the behavior of the patients e.g. head injury, post craniotomy, Stroke, bleeding. In the meantime there was not effective treatment for depression; Prophylaxis be normally used to prevent a depressive disorder (Tortora et al., 2006). In neurology works there are a number of studies on the organization of traumatic brain injury. In India a stroke appears toward be a major reason of pressure and 30 percent of illed people report a gastrointestinal bleeding (Blocker et al., 1968). This is no evidence on the repetition of suppressing ulcer prophylaxis into patients with a stroke. Such type of work is main to identify near the existing design of tension ulcer prophylaxis in patients. That information can too benefit to transform or improve clinical practice.

MATERIAL AND METHOD

EXPERIMENTAL ANIMALS

Wistar adult mice healthy 250–300 gms of sex were selected for the work. The mice were found in a laboratory of the Translam Institute of Pharmaceutical Education and Research. The mice were kept in ordinary cages and kept below normal. They are assumed regular food and water ad libitum. An earlier study of animals from Meerut was developed by the Committee for the Purpose of Animal Control and Monitoring (CPCSEA).

PREPARATION OF EXTRACTS

Valeriana wallichii roots are dried in the shade and powdered with a machine grinder, and passed with a mesh. The sieved sprinkle was kept in an airtight vessel and stored at room-temperature. Rough residue was taken out with petroleum ether. After being dissolved in petroleum ether, the marc was dried in a hot oven at 50^0C, placed in soxhlet compounds, and then extracted with hydro alcohol (1: 1). The extract obtained in this way, was concentrated below decrease pressure using a rotary vacuum evaporator and then concentrated in a vacuum extractor to dry in a water bath.

EVALUVATION OF ANTIULCER ACTIVITY OF VALERIANA WALLICHII ROOTS EXTRACT

Examination of the roots of Valeriana wallichii roots of antiulcer activity is well done against cold sores caused by bacteria.

Experimental Design for Cold Restraint Stress (CRS) Induced Ulcer Model

Wistar mice of any gender (250–300 g) are divided into five groups of six animals each. Follow-up treatment was given orally twice a day, for 7 days in each group.

Group-I –Control group (Distilled water, 2ml/kg)

Group-II - Negative Control group (Distilled water, 2 ml/kg)

Group-III – Standard group (Ranitidine, 50mg/kg)

Group-IV – Test group; hydroalcoholicextract of *V.wallichi*(HEVW; 200mg/kg) (Khuda F., *et al*)

Group-V – Examination groups; hydroalcoholic extract

wallichi(HEVW; (400 mg/kg)

1. Mice are enforced to swim for 4 hrs in a metal water chamber (60x90cm water level) at a temperature of $8^0 \pm 1^0$C.
2. Specific treatments are given orally for 2 hours before forcing rats to swim.
3. The abdomen was removed and tested for the severity of the ulcers and alternatively analyzed ANOVA & student test. Following parameters were recorded:

(i) Volume of gastric secretion
(ii) pH
(iii) Ulcer Index
(iv) Total Acidity
(v) Free Acidity

DETERMINATION OF GASTRIC PARAMETERS

At the finish of the rehabilitation period the animals were empowered and the abdomen was removed. Stomach fluid taken to test the contents of the gastric fluid parameters and then abdomen unlocked next to a large curvature, washed with cold salt and the degree of serious mucosaldamage (Ulcer-Index) is examined and represent as a total length of the ulcer, perstomach mm (Nishidaetal., 1998). The gastric mucosa was later dehydrated and mixed by a delicious cool salt for the acquisition of gastric mucosa.

DETERMINATION OF OXIDANT-ANTIOXIDANT PARAMETERS

Thio-barbituric Acid Reactive Substance (TBARS) (Ohkawa *et al.*, 1979)

Principle

Lipid per oxidation is a free-radical arbitrated reaction. The prime foods of such harm are complex blend of peroxides, which then collapse to yield carbonyl compounds, e.g. malondialdehyde (MDA). Colorimetric response of thio-barbituric acid with MDA is a sensitive method for measuring lipid per oxidation. The assay provides an estimate of the amount of thiobarbituric acid reactive substance (TBARS), e.g., MDA. It's too mentioned to as TBARS test.

Reagents

1. 0.8% TBA sol^n: 0.8 gm of TBA was liquefied in purified water and thedimension was make-up to 100ml to make 52nM.
2. 30% TCA solution: 30gm of trichloroacetic acid was liquefied in purified water and the volume makes up to 100ml.
3. Standard TEP reagent 0.02g (±0.004g) of TEP (1,1, 3,3-tetraethoxy propane) was dissolved in 40% ethanol. A further dilution of 100ml with distilled water of this solution to 1000 ml was done. A third dilution of 100 ml of the above solution to 500ml with distilled water finally done. This dilution contained 4µg of reagent per ml.

HISTOPATHOLOGICAL EXAMINATION (Hartez *et al.*, 1947)

Abdominal tissue tasters are placed in neutral-formalin with 24h. The tissues are treated rendering to the ordinary method and the parts are cut by hematoxylin and eosin Bancroft. The shots were microscopically examined for morphological changes like as mobbing, bleeding, edema, tuberculosis, with an inverted gauge to estimate the severity of these changes.

STATISTICALANALYSIS

In all of the above techniques, the results are displayed as Mean±SEM. Arithmetical examination was performed by a single ANOVA method followed by Dunnet's multiple comparative tests. A value of "p" of less than 0.05 was considered significant.

RESULTS AND DISCUSSION

ANTIULCER ACTIVITY OF*VALERIANA WALLICHII ROOTS* EXTRACT

Effect of Ranitidine and Hydro alcoholic Extract of *Valeriana wallichii* on Gastric Juice Volume, pH, free acidity and Total-Acidity on Stress Induced Ulcerin Rats.

Table 1: Effect of stress, ranitidine and hydro alcoholic extract of *V.wallichii*stress induced ulcer in rats.

Groups	GastricVolume (ml/100g)	Gastric Juice pH	Free-acidity (mEq/L)	Total-acidity (mEq /L)
NormalControl	1.25±0.01	3.44 ±0.06	21.70±0.27	6.82±0.12
NegativeControl	1.77±0.01**	2.36±0.05**	34.29±0.18**	15.19±0.22**
Ranitidine (50 mg/kg)	1.10±0.01**	5.53±0.03**	17.40±0.32**	4.80±0.05**
HEVW (200 mg/kg)	1.16±0.01*	5.28±0.06*	19.64±0.24*	5.71±0.11*
HEVW (400 mg/kg)	1.06±0.01**	5.89±0.03**	16.61±0.36**	4.41±0.07**

Effect of Stress, Ranitidine and Hydroalcoholic Extract of *Valeriana wallichii* on Ulcer Index in Stress Induced-Ulcers in Mice

Table 2: Effect of stress, ranitidine and hydroalcoholic extract of *V.wallichii* nulcer index in stress induced ulcers in rats.

Groups	Ulcer index	% inhibition
Normal Control	-	-
Negative Control	0.98±0.04**	-
Ranitidine (50 mg/kg)	0.59±0.02**	36.90
HEVW (200 mg/kg)	0.75±0.03*	23.13
HEVW (400 mg/kg)	0.35±0.05**	38.48

EFFECT OF STRESS, RANITIDIN ANDHYDROALCOHOLIC EXTRACT OF VALERIANA WALLICHII ROOT SANTIOXIDATION ON OXIDANT-PARAMETERS

Table 3: Effect of hydroalcoholic extract of *Valeriana wallichii* on oxidant-antioxidant parameters on stress induced ulcer in rats.

Groups	TBARS (nmol MDA/mg pr.)	GSH (µmol/gtissue)	SOD (U/mgprotein)	Catalase (U/mgprotein)
Normal-Control	0.66±0.03	20.76±0.44	26.40±0.36	17.86±0.46
Negative-Control	2.09±0.05**	12.83±0.26**	20.57±0.23**	8.84±0.28**
Ranitidine(50 mg/kg)	1.16±0.14**	16.22±0.27**	23.39±0.29**	13.80±0.31**
HEVW (200 mg/kg)	0.95±0.08**	14.50±0.21**	21.78±0.30*	12.96±0.27**
HEVW (400 mg/kg)	1.17±0.08**	18.94±0.18**	24.04±0.30**	16.34±0.17**

EFFECT OF STRESS, RANITIDINE AND HYDROALCOHOLIC EXTRACT OF *VALERIANA WALLICHI* ON HISTOPATHOLOGICAL CHANGES OF GASTRIC MUCOSA IN COLD RESTRAINT MODEL OF STRESS

There were no mucosal hemorrhge observed in the rats fed with the normal saline and did not went to the stress condition.

There were serious mucosal hemorrhage (in black color) in the CWRS group and erosion of gastric mucosa was also observed along with serious inflammation morethan five prominant ulcers were observed.

There were no gastric mucosal injury or hemorrhage was seen but the serious inflamation along with redness of mucosa was detected in ranitidine (50 mg/kg) treated mice.

No erosion of gastric mucosa was observed and hemorrhage occured but someredness was seen in WRS rats when formulated through hydroalcoholic abstract of *Valeriana wallichii* (200mg/kg) for seven days. Mucosa was quite intact.

WRS rats when formulate through hydroalcoholic extract of *Valeriana wallichii* (400mg/ kg) for seven days there mucosa was quite similar with saline treated rats, no distruption of mucosal layer and no hemorrhage was seen, mucosa was intact and healthy.

DISCUSSION

Peptic ulcer is the most common gastrointestinal disease that occurs as an outcome of a difference between the acidic element of pepsin and the repairs of mucosal integrity through a chronic immune system. To restore balance, various treatments, including spices and herbs, have been used. The ulcer indicator is an indicator of ulcer formation and ulcer creation is straight connected to causes like as abdominal volume, pH, free acid. These reasons are related through the formation of high intestinal injury as well as ulcers, ulcers and life threatening fullness and bleeding.

Model cold pressure, pressure produced mucosal damage. CRS has created significant imbalances in normal physical conditions. As a result, the ulcers develop as a result of the grinding and deterioration of the abdominal mucosa.

The presence of flavonoids, triterpinoids, carbohydrates and glycosides has been confirmed in Valeriana wallichii by many other researchers. A substantial growth in the antiulcer action of Valeriana wallichii may be due to the occurrence of flavonoids and phenolic compounds. Flavonoids are among the most cytoprotective agents in which the effectiveness of antiulcer is highly guaranteed. It's advised that, these active mixtures will be able to stimulate mucus, bicarbonate and prostaglandin secretion. Therefore, the antiulcer activity of Valeriana wallichii can be caused by the content of flavonoids. Hydoalcoholic extract (200mg / kg) was less effective compared with various parameters such as ulcer index, pH, total and free acid compared to negative and standard (Ranitidine 50 mg/kg) control. While the release of hydroalcoholic at a dose of 400 mg/kg shows the greatest antiulcer effect above all limits. The oxidative harm by lipid peroxidation in stress-inducedulcer into mice was confirmed by improved in TBARS levels in negative control group (2.09 ± 0.05) while associated with that of the normal control group (0.66±0.03). Treatment with hydroalcoholic extract of *Valeriana wallichii* caused decrease in TBARS value. Also, rate imperiled to pressure only (negative control

group) presented substantial reduction inGSH contents as associated to normal controller group (20.76 ± 0.44). The per oral administration of hydroalcoholic extract of *Valeriana wallichii* at doses 200 & 400 mg/kg significantly reversed the GSH depletion.

Further, the reduction of GSH gratified in toxic-group led to disturbance of other oxidative alleyway enzymes such SOD and catalase. The extract of *Valeriana wallichii* treatment reversed the SOD and catalase towards normal.

The results of the current work suggested that the hydroacloholic abstract of *Valeriana wallichii* roots might be helpful in the tretment of gastric-ulcer with antioxidant property. Further studies are suggested to recognize the active moieties and clarification of the mode of action is recommended.

3.6 CONCLUSION

Current work was designed to assess antiulcer activity of hydroalcoholic extract of *Valeriana wallichii* roots by cold stress induced gastric ulcer in Wistar mice. The outcomes of this work concluded that, the hydroalcoholic extract (200 mg/kg) was less effective against the many limits like ulcer index, pH, total and free acidity when compared with control and standard (Ranitidine 50 mg/kg). Whereas extract at a dose of 400 mg/kg showed antiulcer effect greater than with its respective dose and also, ranitidine.

The present research suggested that the roots of *Valeriana wallichii* exhibited considerable antiulcer and antioxidant activity. However, further study is needed to isolate the active constituents responsible for the antiulcer effect and further pharmacological studies should be performed on those isolated constituents, for producing a safe antiulcer drug from herbal origin.

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