

AN STUDY OF ANALGESIC ACTIVITY OF HAFFNER'S TAIL CLIP METHOD ON ALBINO WISTAR RATS OF SOME POLYHERBAL FORMULATION

LOKENDRA SINGH*

Research Analyst, Bilwal Medchem, and Research Laboratory (BMRL) Pvt. Ltd., Rajasthan, India. Email: slokendra1996@gmail.com

Received: 12 June 2019, Revised and Accepted: 15 July 2019

ABSTRACT

Objective: Herbal drugs are more beneficial better than aspirin because this is an herb so no side effect this drug and it is easy to collect or use to as herbal drugs. Words are inadequate to describe the motivation for my work given to my beloved guide. I would like to add special thanks to my guide Gauravbilwal, for their guidance, support, and encouragement.

Purpose (Hypothesis): The main purpose of this article pays to attention for herbal drugs because they are naturally old effective drugs. As well as, Ayurveda treatment is very older effective technique.

Design/Method: Haffner gave to this technique of determining analgesic are around in 1929.

Procedure: This technique according to tail if clipped with any object and tightly or will be compression generation of pain in the tail as well as mice starting to bite that portion of its tail, and could evaluate and recorded the response how much it bites tail quickly or in potential.

- Using this simple yet important marvel, we may apply the drug to be evaluated and record the response whether it bites tail quickly or in potential.
- If given drugs have analgesic likely, then rat will not bite its tail so frequently.
- Mice that do not show any response within 15 s will reject from the experiment.

Results: The found in analgesic activity of additional compounds test to significant on tail flick test than acetic acid-induced test and thus it appears that the test compounds inhibit predominantly the peripheral pain mechanism. The results of the study indicate that the extracts of polyherbal plants of analgesic activity by reducing the abdominal constriction significantly and may supposed to have a possible role in inhibition of cyclooxygenase in the prostaglandin pathways ($p^{****}<0.0001$, $***0.0001$, $*0.05$).

Conclusion: The present study showed the significant analgesic effect of both aqueous and alcoholic at 400 mg/kg doses in albino rats, we reported for the 1st time analgesic effect of different plants (*Curcuma longa*, *Colchicaceae*, *Colocynthis*, *Withania somnifera*, and *Achyranthes aspera*) in Haffner's tail clip models. Aspirin has each uncoated effervescent tablet content are acetylsalicylic acid I.P. 325 mg. Finally summarized in this article represent a most effective results of herbal drugs equalized allopathic drugs without any other side effect. Hence, this is very usefully combination of Ayurveda drugs.

Keywords: Tail clip, Plant's extracts and Graph pad prism, Wistar rats.

© 2019 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>) DOI: <http://dx.doi.org/10.22159/ajpcr.2019.v12i9.34561>

INTRODUCTION

The Wistar rat is an outbred stock, used in all fields of medical and biological research. Its longevity and high rate of spontaneous tumors make it an ideal choice for aging studies. It is an albino strain, easy-to-handle; it is, however, slower learner than Long-Evans rat. Domestic rats live about 2–3.5 years. To Quinn, the average laboratory rat lives approximately 3 years. In a survey, rat lifespan in the UK was 21.6 months, and 95% had died by the age of 3 years.

The temperature in the experimental animal room should be 22°C (+3°C). Although the relative humidity should be at least 30% and preferably not exceed 70% besides during room cleaning, the aim should be 50–60%. Lighting should be artificial, the sequence being 12 h light and 12 h dark. For feeding, conventional laboratory diets may be used with an unlimited supply of drinking water and then individually housed in wire-topped laboratory polycarbonate cages measuring 408 mm × 282 mm × 150 mm. Animals may be group-caged by dose, but the number of animals per cage must not interfere with clear observations of each animal.

Aspirin is mostly used in specific inflammatory or analgesic condition, it will well is called acetylsalicylic acid by as this drug mainly used to treatment to inflammation and this drug are nonsteroidal anti-inflammatory drugs. The IUPAC name of this drug is 2-acetoxybenzoic

acid. Aspirin has each uncoated effervescent tablet content is acetylsalicylic acid I.P. 325 mg.

Turmeric (*Curcuma longa*) is called here "spice life of" and "golden spice." It has been used to India as the medicinal plant and holy immemorial. India is the largest producer, consumer, and exporter of turmeric. Many commercially used in cosmetics and ayurvedic formulations contain Kasthuri turmeric. In the domain of an application aromatic plant for skincare [1].

Suranjan (*Colchicum autumnale*) is generally called naked ladies [2] or autumn crocus, meadow saffron [3], a winter flowering plant will be bloom and resembles the crocuses, opposite but related to the Colchicaceae plant family, unlike the true crocuses that belong to the member of Iridaceae family. The vernacular name of "meadow saffron" is despite; this plant does not the source of saffron obtained from the saffron crocus, *Crocus sativus* – and that plant too is sometimes called "autumn crocus." *C. autumnale* is the only species of its family native to Great Britain and Ireland [4].

Indrayani (*Citrullus colocynthis*) its originally scientific name was *Colocynthis citrullus* but is still now classified changed it as *C. colocynthis*. Generally found of North West, the Punjab, Sind, and Central and southern India, and Coromandel Coast wild in the sandy lands. Also, be

found in the Mediterranean region indigenous Arabia, West Asia, and Tropical Africa.

Ashwagandha (*Withania somnifera*), is called here, Indian ginseng or winter cherry is double adaptogenic quality, so it's due to sedative and tonic [5], *Withania* is referring to primary plants extract or *somnifera* means "sleep-inducing" [6], as well as ashwagandha is derived in two reasons - the roots of the herb odor similar a horse and, there is a usually held belief that a person intense extracts of the herb may improving the strength and similar vitality to that of a horse [7] Ashwagandha is also known as the "SattvicKaphaRasayana.[8]"

Chirchita (*Achyranthes aspera*) rendering to the WHOM up to 80% worldwide's population relies on traditional herbal medicine are depending on Chirchita (*A. aspera*) for their primary health care [9]. In various plants continue to serve as soon as possible sources for derived from various parts of plant's new drugs and chemicals [10]. Recently does modern drugs pronounced cumulative and irreversible reactions and it is an important change. As due to overpopulation, urbanization, and continuous exploitation of these herbal stored, the natural resources along with their connected traditional knowledge are depleting day by day [11].

MATERIALS AND METHODS

Plant material

Plant sample was collected from the herbal garden of Bilwal Medchem and Research Laboratory Pvt. Ltd., Mandha, Jaipur and botanical authenticate by the botanist of Bilwal Medchem and Research Laboratory Pvt. Ltd., Reengus, Sikar.

Chemicals

The ethanol absolute (analytical reagent) for used in this experiment. The purity of ethanol is assay 99%, maximum impurities - non-volatile 0.001%, acidity as H⁺ (mmol/100) 0.04%, alkalinity as OH⁻ (mmol/100) 0.01%, isopropyl alcohol 0.01, methanol 0.05%, and water 0.01%. The supplier of this chemical is Changshu Hong Sheng Fine Chemical Co. Ltd.

Standard drugs

Aspirin is an effective analgesic for acute pain, although it is generally considered inferior to ibuprofen because aspirin is more likely to cause gastrointestinal bleeding [12]. As with other nonsteroidal anti-inflammatory drugs, combinations of aspirin and caffeine provide slightly greater pain relief than aspirin alone [13]. This tablet manufactured by Reckitt Benckiser Healthcare (India) Limited.

Preparation of extract

The root was washed in running water and cut into small pieces for drying. These pieces take in the hot air oven and dried for 12 h at 60°C. The separately taken was dried plant material (root) and grounded using an electric blender to obtain a coarse powder. The dried coarse powder was then extracted with an ethanol solution using Soxhlet apparatus.

Animal

In the experimental study were selected Wistar rats (100–150 g). Laboratory conditions of temperature (21.5±22°C), humidity (60±1%), and 12-h light/dark cycle were the animals kept. They were allowable free access to food (standard pellets) and water *ad libitum*. Experimental protocols and procedures used in this study were approved by the Institutional Animal Ethical Committee of the Institute of Biomedical and Industrial Research, Jaipur, Rajasthan.

Haffner's tail clip methods

Haffner's gave to this technique of determining analgesic are around in 1929.

Procedure

- This technique according to tail if clipped with any object and tightly or will be a compression generation of pain in the tail and mice starting to bite that portion of its tail, and could evaluate and recorded the response how much it bites tail quickly or in potential
- Using this simple, yet important marvel, we may apply the drug to be evaluated and record the response whether it bites tail quickly or in potential [14,15]
- If given drugs have analgesic likely, then rat will not bite its tail so frequently
- Mice that do not show any response in 15 s will reject from the experiment [16,17].

Group design

- Group (N): Six animals use albino Wistar rats were administered 5 ml/kg/p.o. negative control.
- Group (S): Six animals use albino Wistar rats in the standard group.
- Group 1: Six animals use albino Wistar rats were administered 400 mg/kg/p.o. (test group first) in turmeric and Suranjan (aqueous) ext.
- Group 2: Six animals use albino Wistar rats were administered 400 mg/kg/p.o. (test group second) in turmeric and Suranjan (alcoholic) ext.
- Group 3: Six animals use albino Wistar rats were administered 400 mg/kg/p.o. (test group third) in turmeric, Suranjan (*Colchicum luteum*), Indrayani (*C. colocynthis*), and ashwagandha (aqueous) ext.
- Group 4: Six animals use albino Wistar rats were administered 400 mg/kg/p.o. (test group fourth) in *A. aspera* seed + stem (aqueous) ext.
- Group 5: Six animals use albino Wistar rats were administered 400 mg/kg/p.o. (test group fifth) in *A. aspera* seed + stem (alcoholic) ext.
- Group 6: Six animals use albino Wistar rats were administered 400 mg/kg/p.o. (test group sixth) in *A. aspera* seed + stem (aqueous) and turmeric or Suranjan (alcoholic) ext.



Figure 1: Testing performed by haffner tail clip method

Table 1: The response in seconds (Mean±SD/SEM)

| Negative group | Standard group | Test Group 1 | Test Group 2 | Test Group 3 | Test Group 4 | Test Group 5 | Test Group 6 |
|----------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 9.4±1.07 | 17.6±1.36**** | 13.2±0.73* | 13.8±0.58* | 15.2±0.73*** | 13.8±1.01* | 14±0.83** | 13.4±0.74* |

SD: Standard deviation, SEM: Standard error of the means

Table 2: Units and Symbols

| Units and symbols | | |
|---------------------|-------------|-----------|
| Physical quantity | Base unit | SI symbol |
| Mass | kilogram | kg |
| | microgram | µg |
| Time | second | s |
| | minute | min |
| | hour | h |
| Amount of substance | mole | mol |
| Volume | milliliter | ml |
| | temperature | °C |

Statistical analysis

All values of results are presented as a mean ± standard error of the means. The statistical analysis involving eight groups was evaluated by Student's t-test.

RESULTS

p****<0.0001, ***0.0001, *0.05

The found in analgesic activities of additional compounds test to significant on tail flick test than acetic acid-induced test and thus, we see that the test compounds inhibit predominantly the peripheral pain mechanism (Fig. 1). In writing tests, the abdominal contraction response encouraged by acetic acid is a sensitive procedure to start peripherally acting analgesics for writing tests. This response is included thought to local peritoneal receptors. The results of the study indicate that the extracts of polyherbal plants of analgesic activity by reducing the abdominal constriction significantly and may be supposed to have a possible role in the inhibition of cyclooxygenase in the prostaglandin pathways (Tables 1 and 2).

DISCUSSION

In this result based on my interpretation data p****<0.0001, ***0.0001, *0.05 Haffner's tail clip model of analgesic, most important in studying activities for analgesic drugs this event is beneficial in human life. Hence, this is very useful drugs to effective for humans and others. The results of the study indicate that the extracts of polyherbal plants of analgesic activity by reducing the abdominal constriction significantly and may suppose to have a possible role in the inhibition of cyclooxygenase in the prostaglandin pathways.

CONCLUSION

The present study showed the significant analgesic effect of both aqueous and alcoholic at 400 mg/kg doses in Albino rats, we reported the first analgesic effect of different plants (*C. longa*, *Colchicaceae*, *colocynthis*, *Withania somnifera*, and *A. aspera*) in Haffner's tail clip models. Aspirin has each uncoated effervescent tablet content is acetylsalicylic acid I.P. 325 mg. Aspirin is an effective analgesic for acute pain, but these herbal extract drugs are more beneficial better than aspirin because this event is an herb so no side effect this drug. Haffner's tail clip model of analgesic, most important in studying activities for analgesic drugs this event is beneficial in human life. Finally, summarized in this article represent a most effective result of

herbal drugs equalized allopathic drugs without any other side effect. Hence, this event is a useful combination of Ayurvedic drugs.

AUTHORS' CONTRIBUTIONS

Mr. Lokendra Singh reporting biotechnologist preparation of manuscript, Mr. Gurav bilwal from B.M.R.L had provided good environmental condition for animal house, financial support, and providing the animal subject for the experimental purpose so had to vital for the project. Gauravbilwal supervised and reviewed the manuscript and Dr. Deepak Goadra reviewed the manuscript.

CONFLICTS OF INTEREST STATEMENT

The author announces that they have no conflicts of interest.

REFERENCES

- Kojima H, Yanai T, Toyota A. Essential oil constituent's from Japanese and Indian curcuma aromatic rhizomes. *Planta Med* 1998;64:380-1.
- Clap ham AR, Tutin TG, Warburg EF. *Flora of the British Isles*. Cambridge: Cambridge University Press; 1962. p. 982.
- Botanical Society of Britain and Ireland on 2015-01-25. BSBI List; 2007. Available from: <https://www.revolvy.com>. [Last accessed on 2014 Nov 17].
- Parnell J, Curtis T, Webb DA. *Webb's an Irish Flora*. Cork: Cork University Press. 2012. p. 504.
- Monograph '*Withaniasomnifera*'. *Altern Med Rev* 2004;9:211-4.
- Ven Murthy MR, Ranjekar PK, Ramassamy C, Deshpande M. Scientific basis for the use of Indian Ayurvedic medicinal plants in the treatment of neurodegenerative disorders: Ashwagandha. *Cent Nerv Syst Agents Med Chem* 2010;10:238-46.
- Chandrasekhar K, Kapoor J, Anishetty S. A prospective, randomized double-blind, placebo-controlled study of safety and efficacy of a high-concentration full-spectrum extract of ashwagandha root in reducing stress and anxiety in adults. *Indian J Psychol Med* 2012;34:255-62.
- Sharma CG. *Ashwagandharishta Rastantra Sar Evam Sidhyaprayog Sangrah*. Nagpur: Krishna-Gopal Ayurveda Bhawan (Dharmarth Trust); 1938. p. 743-4.
- Arun V, Lieu VB, John JV, Reena B, Renuka PC. Traditional remedies of Kani tribes of Kottoor reserve forest, agasthyavanam, Thiruvananthapuram, Kerala. *Indian J Tradit Knowl* 2007;6:589-94.
- Tijani Y, Uguru MO, Salawu OA. Anti-pyretic, anti-inflammatory and anti-diarrheal properties of *Faidherbia albida* in rats. *Afr J Biotech* 2008;7:696-700.
- Pande PC, Tiwari L, Pande HC. Ethnoveterinary plants of uttaranchal a review. *Indian J Tradit Knowl* 2007;6:444-58.
- Sachs CJ. Oral analgesics for acute nonspecific pain. *Am Fam Physician* 2005;71:913-8.
- Derry CJ, Derry S, Moore RA. Caffeine as an analgesic adjuvant for acute pain in adults. *Cochrane Database Syst Rev* 2012;3:CD009281.
- Satish AM, Brahadesh M, Kalabharathi HL, Pushpa VK, Jayanthi M, Suresh RN. Evaluation of analgesic activity of aqueous extract of fenugreek seeds in albino mice. *Int J Recent Trends Sci Technol* 2013;9:166-88.
- Poonam SM, Jangde CR, Narnawal SD, Subhash R. Experimental evaluation of analgesic property of bark skin of *Saraca indicia* (Ashoka) and *Shorea robusta* (shal). *J Appl Pharm Sci* 2014;4:62-5.
- Seema R, Mahesh CG. Evaluation and comparison of the antinociceptive activity of aspartame with sucrose. *Pharm Rep* 2012;64:293-8.
- Meena MK, Jain AK, Gaur K, Kori ML, Take A, Nema RK. Screening of anti-inflammatory and analgesic activity of *Cassia grandis* Linn. *Academic J Plant Sci* 2009;2:51-5.