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Research Article

A STUDY ON ANALGESIC EFFECT OF LEVOCETRIZINE IN EXPERIMENTALLY INDUCED PAIN MODELS IN ALBINO MICE

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A R T I C L E I N F O

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A B S T R A C T

Pain is an unpleasant sensory and emotional experience caused by tissue damage and release of various pain mediators, of which histamine enhances secretion of nerve growth factor responsible for hyperalgesia. Selective H_1 antihistaminic drug exerts anti-nociceptive effect by blocking the H_1 receptors. We planned a study to evaluate the analgesic effect of Levocetrizine in pain induced mice models. After getting IAEC clearance, 24 inbred adult albino mice of both sexes were divided into 4 groups with 6 animals in each group. Animals were allowed to take normal feed & distilled water orally . Animals in the standard group received Inj.Morphine 20mg/kg BW intraperitoneally (ip). Animals in the Test group 1 received T.Levocetrizine 0.5 mg/kg BW(ip) and Test group 2 received T. Levocetrizine 1 mg/kg BW (ip). Analgesic effect was evaluated periodically at 0, 30, 60, 90, 120 minutes by Eddy's Hot Plate method and Haffner's Tail Clip method. Statistically significant pain reduction was observed in standard, test 1 and test 2 groups($p<0.001$)when compared to control group and Levocetrizine has analgesic effect at 0.5 mg/kg and 1mg/kg BW, comparable to Inj.Morphine 20 mg/kg BW.Levocetrizine has significant analgesic activity at 0.5 mg/kg and 1 mg/kg. It can be considered as an add-on therapy for pain relief in patients with allergic conditions

INTRODUCTION

Pain is an unpleasant sensory and emotional experience caused by tissue damage and release of various pain mediators like histamine, serotonin, bradykinin and prostaglandins, of which histamine enhances secretion of nerve growth factor responsible for hyperalgesia[1]. Levocetrizine, selective H_1 antihistaminic drug exerts anti-nociceptive effect by decreasing nerve growth factor peptide level due to blockade of H_1 receptors. It has high safety profile[2] when compared to NSAIDs.

AIM

To evaluate the analgesic effect of Levocetrizine in pain induced mice models.

MATERIALS & METHODS

The analgesic effect of levocetrizine was evaluated in adult albino mice of both sexes.The study was done after obtaining approval from Institutional Animal Ethical Committee of Madurai Medical College, Madurai, dated. The study was conducted in the central animal house, Institute of Pharmacology, Madurai Medical College,

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Duration of the Study

This study was conducted from March 2021 to April 2021

Number of Animals Used

24 adult albino mice weighing about 25 –30 grams of either sex

Materials of the Study

1. Twenty four Adult Albino mice of either sex (25-30g)
2. Inj.Morphine20mg/kg BW
3. Tab. Levocetrizine (0.5, 1 mg/kg BW)
4. Distilled water
5. Equipment - Analgesiometer

Artery clips with thin rubber sleeve

6. Oral feeding tube
7. Stop watch
8. Thin cloth
9. Beaker and Jar

Animals

Inbred adult albino mice of both sexes were obtained from the Central animal house, Madurai Medical College for the study. 24 adult albino mice each weighing 25 to 30 grams were used in the study. Animals were divided into four groups, of six animals each . Animals were allowed to take normal feed & distilled water orally.

Preparation of Drug Solutions And Drug Administration

Inj.Morphine was given in the dose of 20mg/kg BW intraperitoneally (ip). Tab. Levocetrizine was dissolved in distilled water and was given in the dose of 0.5 and 1mg/kg intraperitoneally.

METHODOLOGY

The study was done by following the principles of CPCSEA and utmost care was given while handling of animals and adequate care was given to them. After getting IAEC clearance, 24 inbred adult albino mice of both sexes were divided into 4 groups with 6 animals in each group. Animals were allowed to take normal feed & distilled water orally.

Fig 1 Hot Plate Method

Fig 2 Tail Clip Method

Animals in the standard group received Inj.Morphine20mg/kg BW intraperitoneally (ip). Animals in the Test group 1 received T.Levocetrizine 0.5 mg/kg BW(ip) and Test group 2 received T. Levocetrizine 1 mg/kg BW (ip). The standard and the test drug were administered intraperitoneally. Analgesic effect was evaluated periodically at 0, 30, 60, 90, 120 minutes by Eddy's Hot Plate method (Fig 1) and Haffner's Tail Clip method (Fig 2).

RESULTS

Statistically significant pain reduction (increased pain tolerance) ($p < 0.001$) was observed in standard, test 1 and test 2 groups, when compared to control group. T. Levocetrizine exerted statistically significant analgesic effect at 0.5 mg/kg and 1 mg/kg BW, comparable to Inj. Morphine 20 mg/kg BW.

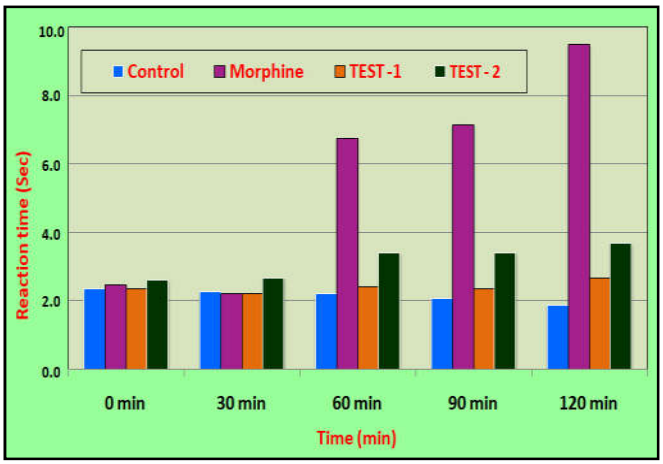

Fig 3 Hot Plate Method

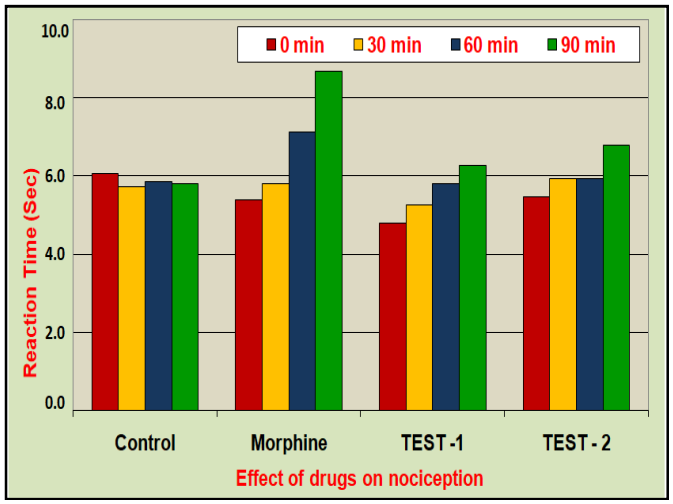

Fig 4 Tail Clip Method

DISCUSSION & CONCLUSION

Histamine receptors both H_1 and H_2 are implicated in nociception mediated by histamine[3]. H_1 receptor antagonist, Levocetrizine possesses good safety profile and has analgesic activity which was evident by the prolongation of reaction time in both hot plate and tail clip methods. Pain reduction was observed at 90 minutes with more significant effect at 1 mg/kg BW when compared to standard drug morphine. Levocetrizine has statistically significant analgesic activity with p value <0.001. Hence, it can be considered as an add-on therapy for pain relief in patients with allergic and inflammatory skin conditions like psoriasis[4].Further studies are required to strengthen the results and prove its efficacy.

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