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DETERMINATION OF ANTI-EDEMATOUS ACTIVITY OF INDOMETHACIN AND NAPROXEN BY USING CARRAGEENAN INDUCE EDEMA IN RATS

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ABSTRACT

This method was used to study acute inflammation. Rats in groups of 3 each were treated with vehicle, Indomethacin and naproxen 30 minutes prior to carrageen an inection. 0.1ml of 1% carrageenan was injected into the right hind paw of each rat. Swelling of carrageenan inected foot was measured at 0, 15, 30, 45, mins using plethysmometer.

KEYWORDS

Carrageenan, Indomethacin, Naproxen and Rats.

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INTRODUCTION

Edema also spelled as “Oedema”. It is an abnormal accumulation of fluid in “Interstitium”, located beneath the skin and in the cavities of the body which can cause several pain. Clinically edema maniests as “SWELLING”. Those condition ia also known as Dropsy. Edema is a swelling usually of the legs, feet, and hands due to accumulation of excessive fluid in the tissues. The edema that occurs in diseases of the heart, liver and kidneys is mainly caused by salt retention which holds the excess fluid in the body.

CARRAGEENAN

The inflamatory reaction induced by carrageenan developed in a form of swelling, oedema with an

increase in rat paw volume up to 55% of the baseline volume. Carrageenan is a long chain water soulble polymer or vegatable gum occuring naturally in the cell walls o certain red sseaweeds. Gelling type are of most intrest in meats kappa and iota gel with themselves and with myosin.

INDOMETHACIN

Indomethacin is a non-steroidal anti inflamatory drug (NSAID) comonly used as a prescription medication to reduce fever, pain, stiness and swelling from inflamation.

It works by inhibiting the production of prostaglandins, endogenous, signalling molecules known to cause these symptoms it does this by inhibiting cyclooxygenase an enzyme that catalyzes the production o prostaglandins.

As a NSAID, indometacin is an analgesic anti inflamantory and antipyretic intimations for indometacin include: joint diseases, headaches etc.

ADVERSE EFFECTS

In general adverse effects seen with indometacin are similar to all other NSAIDS for instake, indomethacin inhibits both Cydo oxygenasa-1 and Cyclo oxygenase-2, which inhibits production o prostsglandins in the stomach and intestine.

- Edema
- Hyperkalemia
- Hypernatremia

NAPROXEN

Naproxen sold under the brand names Aleve naprosyn among others is a nonsteroidal anti inlammatory drugs to treat pain, menstrual cramps, inlammatory disease such as rheumatoid arthritis and ever.

Onset ithin an hour and last upto twelve hours.

Adverse Effects

- Dizziness,
- Drowsiness,
- Headache,
- Rashes,
- Bruising,

MATERIAL

Animals

A total male rats (260-370) were used because mice and rats are mammals with nervous system similar to our own. They feel pain, fear, loneliness and joy as we do. These are the social animals communicate with each other using high frequency sounds. Rats were used in research for first time more than 200 years ago to understand human physiology and medicine.

Drugs

1. Carragenan [0.1ml of 1% aqueous preparation]
2. Indomethacin.I.P-10mg/kg [100mg-100ml]
3. Naproxen.I.P-15mg/kg [250mg-100ml]

OTHER MATERIALS

- 1ml syringe
- Shaving kit to remove hair on the paw of the rat
- Plethysmograph
- Mask
- Gloveses
- Marker
- Weighing balance

METHODS

Oedema method in rats by injecting the carragenan.

Induction of carrageenan in pawedema

Inflammation models induced carrageenan or frequently used acute inflammation models mainly because they are well researched and they exhibit a high degree of re produce ability.

Carregeenan is strong chemical that functions in stimulating the release of inflametari and pro inflametarimediaters, includingbradykinin, histamine, tachykinins, reactive oxygen and nitrogen include edema, hyper lagesia and erythema which develop immediately following the treatment or carrageenan.

Generally, animals are injected with acertain concentration [usually 1%] Of the irritant substance carrageenana in 1 hind foot pad usually half an hour are an hour ater they are treated with the test

compound while the foot pad is injected with saline has a control. The assessment o paw volume thicknes was performed at specified time points ater injections of carrageenan paw volume thicknes was seen in plethysmograph at specified time graph.

Change in paw volume after injected with carrageenan.

Treatment

Among the three rat groups. Group-I taken as a diseased control. And group-II was treated with indometacinn and group-III was treated with naproxen.

DISEASED CONTROL

GROUP-I RATS

These group of rats are injected by the carrgeenan for 3 days. On the 4th day no drug has to be inected to this group of rats.

This group of rats has to be control the edema by their own immune power. This group of rats has also changes their edematous activity by the control of immunity.

If the immunity system of rats are good they may be cure the edema by itself. If immunity system is not so good then edema may be higher.

Changes edematous activity seen in a plethysmograph and note down the paw volume.

GROUP-II RATS

Group-II rats are treated with indomethacin.

According to the I.P indomethacin dose is 10mgl/kg. Normal dose is 100 mg-100ml.

1. Dilute the drug about 1/4th drug is taken and diluted with 10ml of water.
2. 1ml of drug is inected to the group-II rats and check the decreasing the edema by using plethysmograph.
3. Indomethacin is shows effective pharmacological action.

GROUP-III RATS

Group-III rats are treated by naproxen

According to IP naproxen dose is 15mg /kg.

Naproxen is taken 1/4th from the 250mg then dilute with 10ml of water.

125mg-100ml: 74mg-10ml

1ml-10ml (2.5gm)

7.4mg-10ml: (1ml-10ml)

Finally inectthe 1ml of naproxen to the group-III rats.

Then observe the readings for 15 min, 30, 45, 60min by using pletysmograph.

S.No	Carrageenans	species	sex	route	Ld50mg/kg
1	Iota	rat	NR	oral	>5000
2	Iota	rat	NR	inhalation	>930+_74[mg/m3

RESULTS

Table No.1: GROUP-I RATS (DISEASED CONTROL)

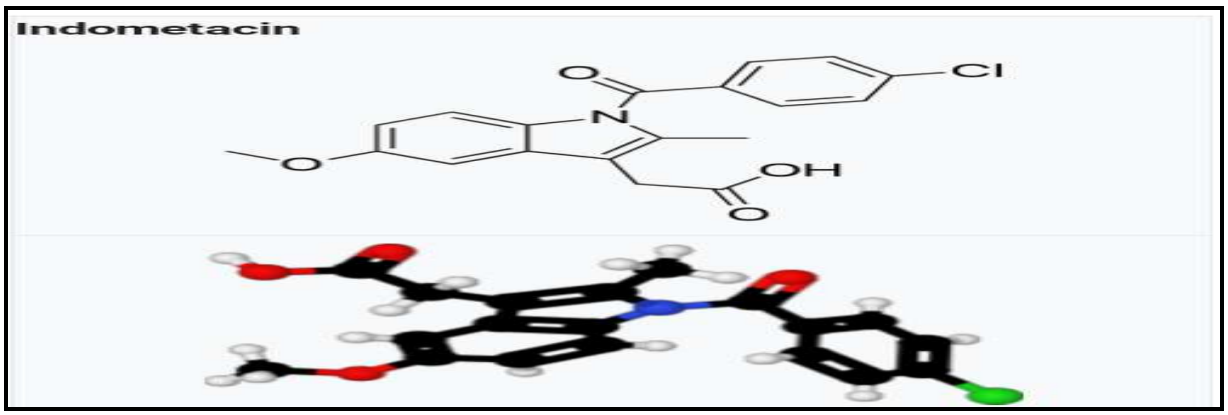
S.No	TIME	LEFT PAW NORMAL	RIGHT PAW EDEMATED LEG
1	15 min	59	64
2	30 min	59	62
3	45 min	59	60
4	60 min	59	58

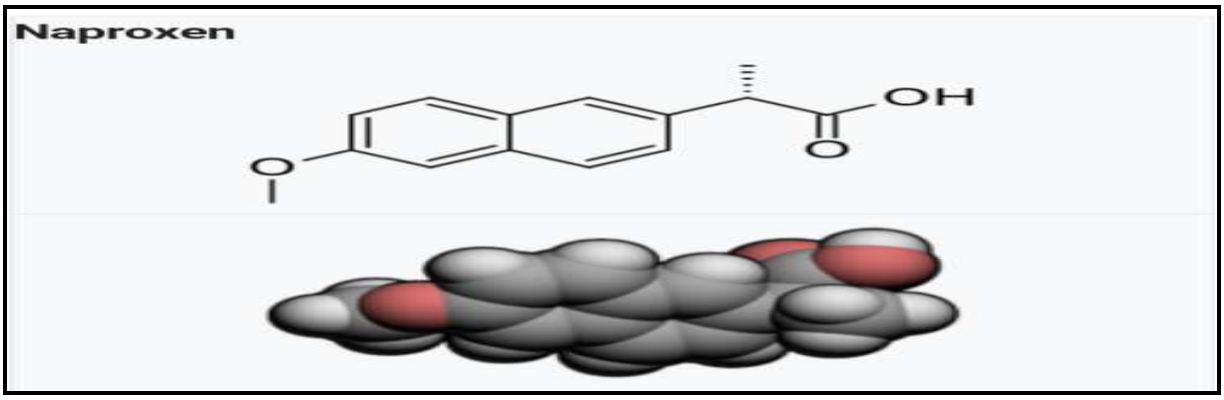
Table No.2: GROUP-II RATS: Indomethacin

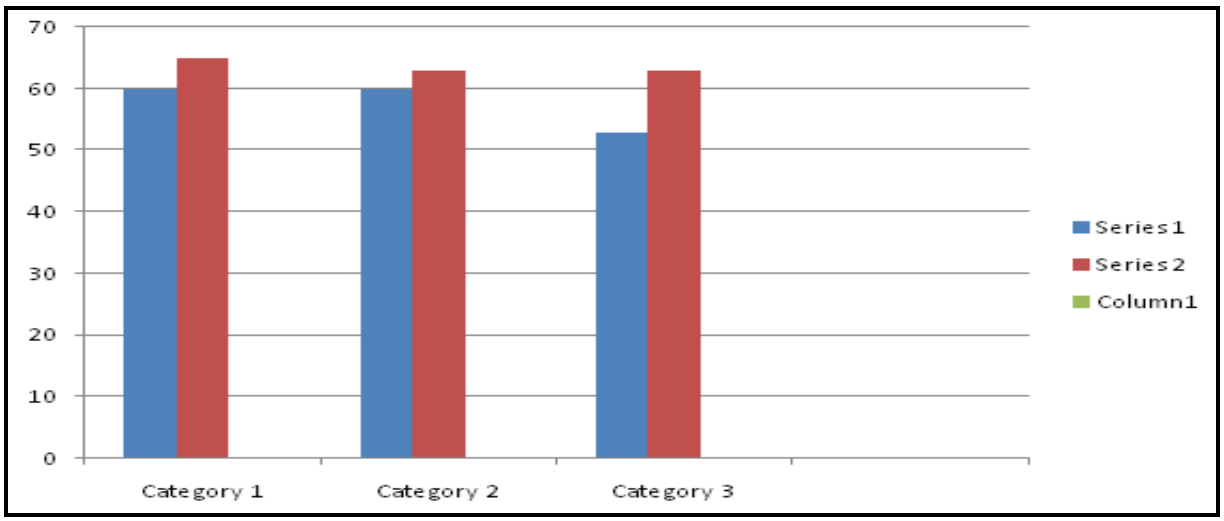
S.No	TIME	LEFT PAW NORMAL	RIGHT PAW EDEMATED LEG
1	15 min	60	59
2	30 min	60	58
3	45 min	60	56
4	60 min	60	54

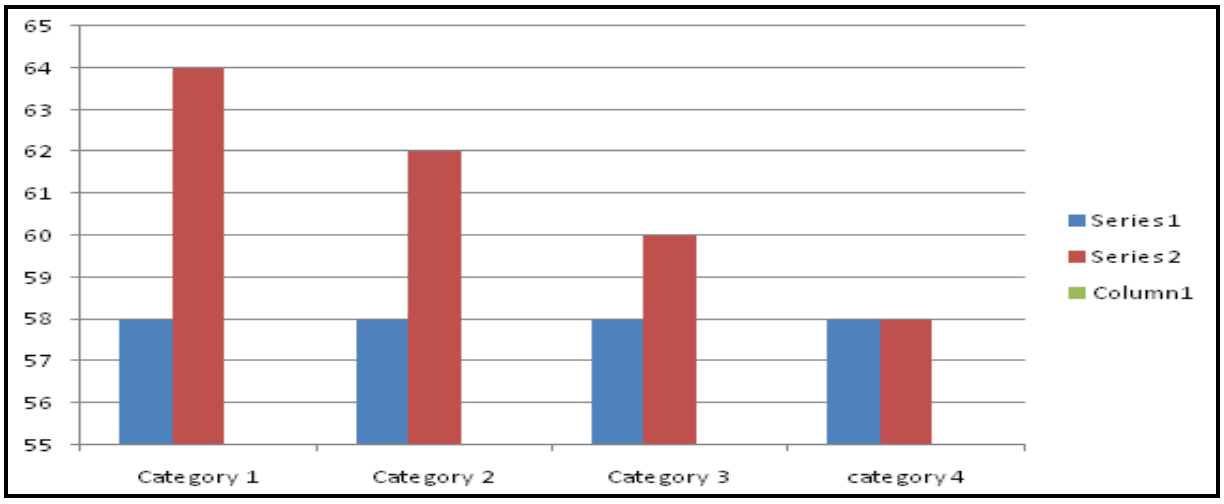
Table No.3: GROUP-III RATS (NAPROXEN)

S.No	TIME	LEFT PAW NORMAL LEG	RIGHT PAW EDEMATOUS LEG
1	15 min	60	62
2	30 min	60	58
3	45 min	60	59
4	60 min	60	58





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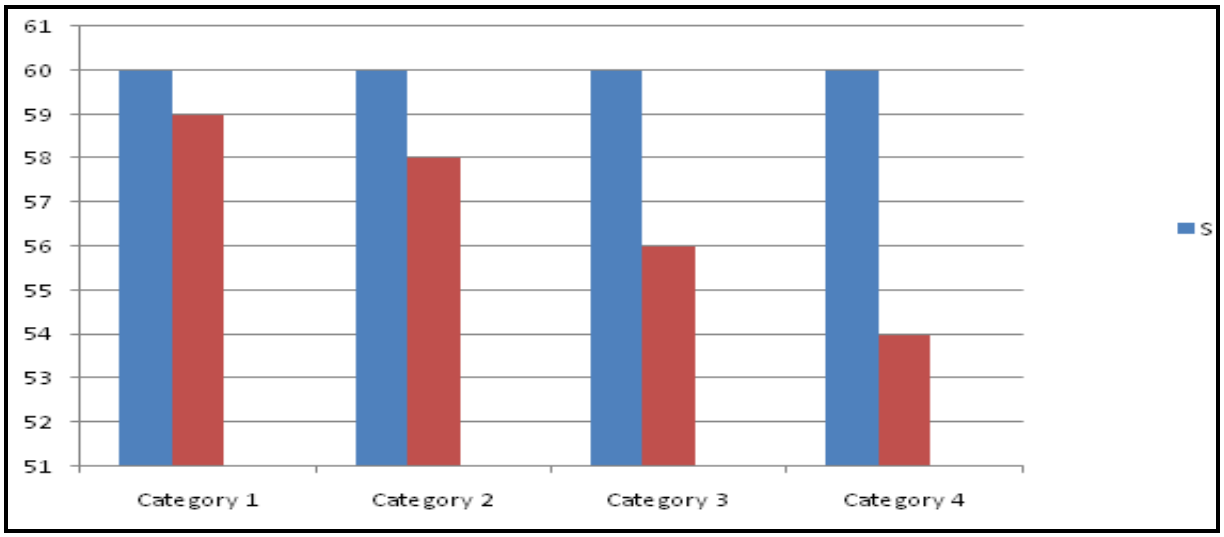
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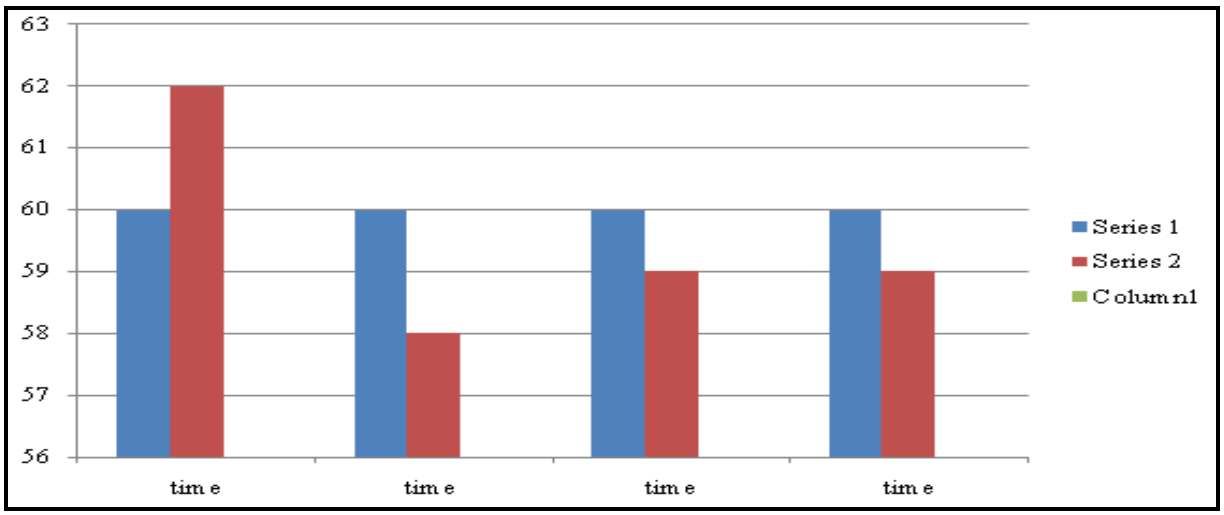
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CONCLUSION

Carrageenan rat paw edema model is traditionally used for search and development of (NSAIDS) non steriodial inti inflammatory drugs.

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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