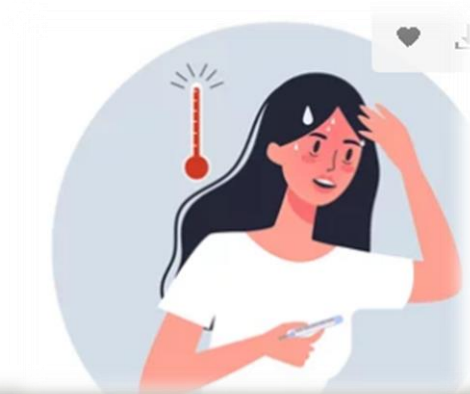


CONTENT

- Introduction
- Causes
- Clinical Sign
- Types
- Screening Models



INFLAMMATION

- ⦿ Inflammation can be simply defined as a protective response of body's immune system against injury .
- ⦿ It is a process by which our body's white blood cells protect us from infection with foreign particles .
- ⦿ Inflammation is body's natural reaction against injury & infection .

CAUSES OF INFLAMMATION

There are various causes of inflammation as follows :

- ⦿ Physical Agents : Heat, cold, Radiation
- ⦿ Chemical Agents : Acid, base, toxic gases
- ⦿ Biological Agents : Viral bacteria , fungal infections .
- ⦿ Metabolic Products : Uric Acid , Urea .
- ⦿ Circulation Disorder : Thrombosis , infarction

CLINICAL SIGN OF INFLAMMATION

- Redness (rubor)
- Swelling (tumour)
- Heat (calor)
- Pain (dolor)
- Loss of function (Functio Laseo)



TYPES OF INFLAMMATION

Depending on the time of duration , inflammation are of two types :

- ◉ Acute Inflammation
- ◉ Chronic Inflammation

ACUTE INFLAMMATION : It occurs for a short time period and a rapid onset

- The characteristics of acute inflammation are:
- Accumulation of fluid & plasma protein on affected side
- Activation of Platelets & Neutrophils .

CHRONIC INFLAMMATION : It occurs for a long time period & remain for longer duration

- The characteristics of chronic inflammations are :
- Mononuclear Infiltration
- Activation of Lymphocytes & Macrophages .

SCREENING MODELS

IN-VITRO METHODS

- Cox Assay
- Mast cell degranulation
- Platelet-neutrophils adhesion
- Adhesion assays
- Inhibition of NO production induced by TNF- α in mouse macrophages

IN-VIVO METHODS

- ◉ UV-B induced erythema in guinea pigs
- ◉ Carrageen induced paw edema model
- ◉ Croton oil induced ear edema in mice
- ◉ Plural exudation method
- ◉ Adjuvant arthritis
- ◉ Air pouch model
- ◉ Cotton pellet induced granuloma

CARRAGEENAN INDUCED PAW EDEMA IN RAT

PRINCIPLE : It is based on the principle that the ability of test drug to inhibit edema produced on the hind limbs of the experimental animals after the injection of inflammatory agent

ANIMAL : Male wistar / Albino rat {100-150gm}

INDUCING CHEMICAL : carageenan

VOL. OF ADMINISTER : 0.01ml by orally or s.c. route

STD. Drug Use: Diclofenac

PROCEDURE

- Animals are divided into three groups . Starved overnight with appropriate water and diet .
- All groups are penetrated by inflammatory agents Eg. Careageenan before 30min. of testing in left paw hind limb of each animal
- The Control group receives distilled water only , while other receives test and standard drug respectively .
- The paw is marked with ink and immersed in water cell of plethysmometer
- After 15 ,30 and 45 min. of injection paw edema volume of test and standard is compared with control group .



A: Before carrageenan injection



B: After carrageenan injection

CROTON OIL EAR EDEMA

PRINCIPLE : It is based on the principle that the croton oil induces inflammation and edema at applied site in animals and local anti-inflammatory agent can be evaluated in this model .

ANIMALS : Mice (22-30gm) Rat (75-80gm)

INDUCING CHEMICALS :

For mice - Croton oil : ethanol : pyridine : ether (1:10:20:69)

For rat - Croton oil : ethanol : pyridine : ether (1:10:20:66)

VOL. OF INJECTION : 0.01ML

PROCEDURE

- The Std test compound dissolve in above solution and applied on ear of all group of animal
- Test compound were dissolved in irritant solution in conc.0.03 to 1 mg/ml for mice and 3 to 10 times higher conc. For rat
- Applied on both side of right ear 0.01ml in mice and 0.02ml in rats of all group while control group receives only vehicle solution
- After 4hrs of the application animals are scarified and ear is removed and disc of 8mm is obtained by cutting the ear .

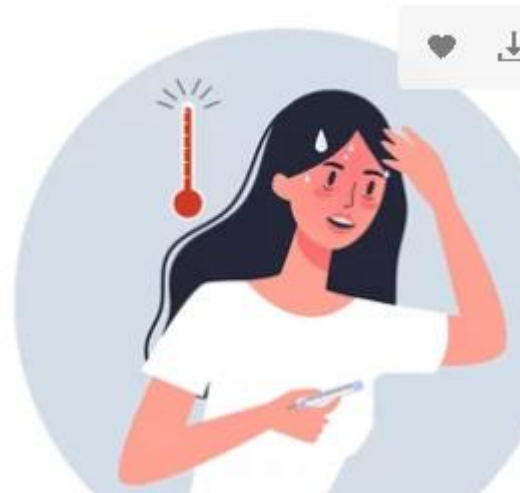
OBSERVATION : The disc are weight and difference between test std. and control is compared .

The difference in the weight is indication of the anti-inflammatory activity .

$$\% \text{ Anti-inflammatory Effect} = \frac{\text{wt. of treated ear} - \text{wt. of contralateral control ear}}{\text{wt. of contralateral control}} * 100$$

ANTI-PYRETIC DRUGS

- ◉ The drugs which lowers the elevated body temperature to the normal .
- ◉ Drugs used are :
 - Aspirin
 - Paracetamol (PCM)



SIGN AND SYMPTOMS

- ◉ Nausea
- ◉ Vomiting
- ◉ Jaundice
- ◉ Abdominal pain
- ◉ Feeling and being sick
- ◉ Stomach pain
- ◉ Headache
- ◉ High temperature
- ◉ Loss of appetite
- ◉ Chills (Shivering)

SCREENING MODELS

- ◉ Brewer's yeast suspension method
- ◉ Antipyretic activity in Rabbits
- ◉ Antipyretic activity in Rats



BREWER'S YEAST SUSPENSION METHOD

- ◉ Animal : Male or Female wistar rat (150gm)
- ◉ Inducing agent : Brewer's Yeast
- ◉ Std. Drug : Phenacetin 100mg/kg orally
- ◉ Procedure
 - 15% suspension of brewer's yeast in 0.09% saline is prepared
 - Group of 6 male and female wistar rat with body weight of 150gm are used .
 - Insert thermocouple to the depth 2cm into the rectum of the rat and record initial temp.

- 10mg/kg brewer's yeast suspension inserted by s.c route in the back below the nape of the neck .
- Massaged at the site of injection in order to spread the suspension under the skin and withdrawn the food after yeast administration .
- After, 18 hours the administration of the yeast the rise in rectal temp. recorded the measurement repeat after 30 min .

- Only animal with body temp. of at least 38*c are taken to the test .
- Animal receive test compound or standard compound by oral administration
- Rectal temperature are recorded again 30,60,120 and 180 min post dosing
- ⊙ Evaluation
 - Difference between initial temp. and after dosing temp.
 - Maximum reduction in rectal temp. is compare to the control group is calculated .

ANTI-PYRETIC TESTING IN RABBIT

- ◉ Animal : Male or female Rabbit (3-5kg)
- ◉ Inducing agent : Lipopolysaccharides
- ◉ Std. Drug : Indomethacin 2.5mg/kg
- ◉ Procedure
 - Lipopolysaccharides from gram negative bacteria eg. E-coli induced fever in rabbit .
 - Rabbit of both sex of the various strains with body weight between 3-5 kg are used .
 - Animal placed in suitable cage and introduced a thermocouples into the rectum

Of the rabbit and allow to adapt to the cage for 60min

- 0.2 microgram lipopolysaccharide are injected i.v. at the dose 0.2ml/kg body weight into the ear .
- 60 min later test compound administered either sc or by oral route and body temp. are monitored for at least 3 hrs
- decreased of the body temp. atleast 0.5* c for more than 30min found as positive effect.