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1. IN -VIVO

# INTRODUCTION

- Diarrhoea is too frequent passage of liquid stool.
- It can range from an acute self limiting episode to severe chronic illness.
- Diarrhoea is defined by WHO as 3 or more loose or watery stools in a 24 hour period
- In pathological term , it occurs due to passage of excess water in feces.

➤ **Pathological due to :-**

- Decrease electrolyte and water absorption.
- increased secretion by intestinal mucosa.
- increased luminal osmotic load.
- inflammation of mucosa and exudation into lumen.

# DIARRHOEA CONDITION

## Acute diarrhoea

- Self limiting
- Last from 3days to 2weeks
- Sudden onset in a previously healthy person.



## **Chronic diarrhoea**

- Last for more than 3 weeks
- Associated with recurring passage of diarrhoeal stools, fever, loss of appetite , nausea , vomiting , weight loss, and chronic weakness

# Causes of Diarrhoea

## Acute diarrhoea

Bacterial

Viral

Drug induced  
protozoal

## Chronic diarrhoea

Tumors

Diabetes

Addison' s disease

Hyperthyroidism

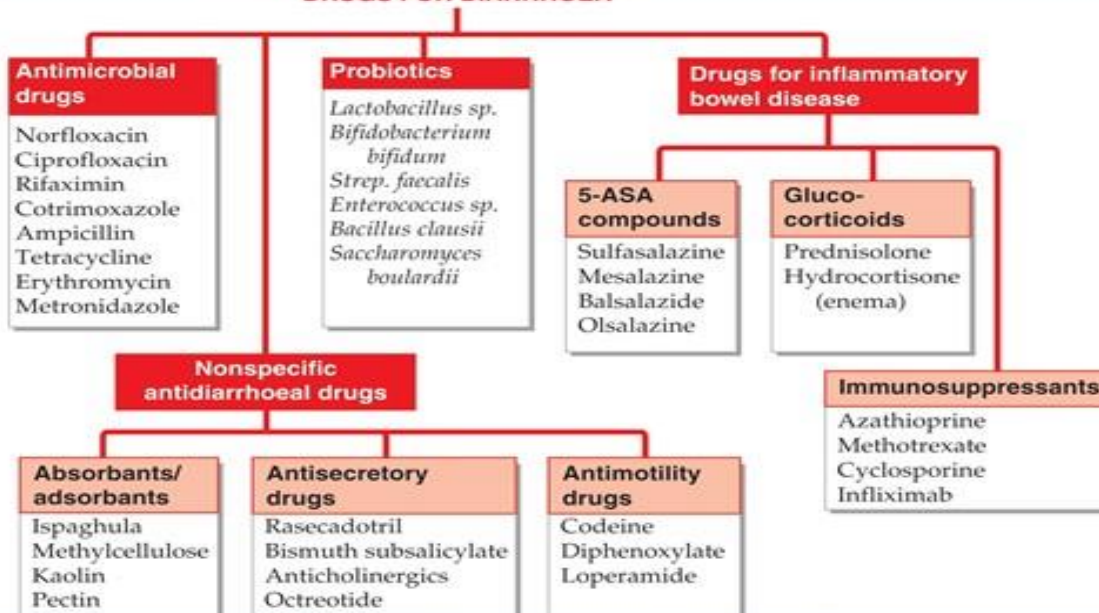
Irritable

# CLASSIFICATION

54

Antidiarrheal Drugs

## DRUGS FOR DIARRHOEA



<https://charanjeetsinghrar.blogspot.in/>



A decorative frame with intricate white floral and scrollwork patterns on a dark background. The frame is centered around a light gray rectangular area with rounded corners. Inside this area is a red-bordered box containing the text.

# SCREENING MODELS



# Screening model

**In vivo method:-**

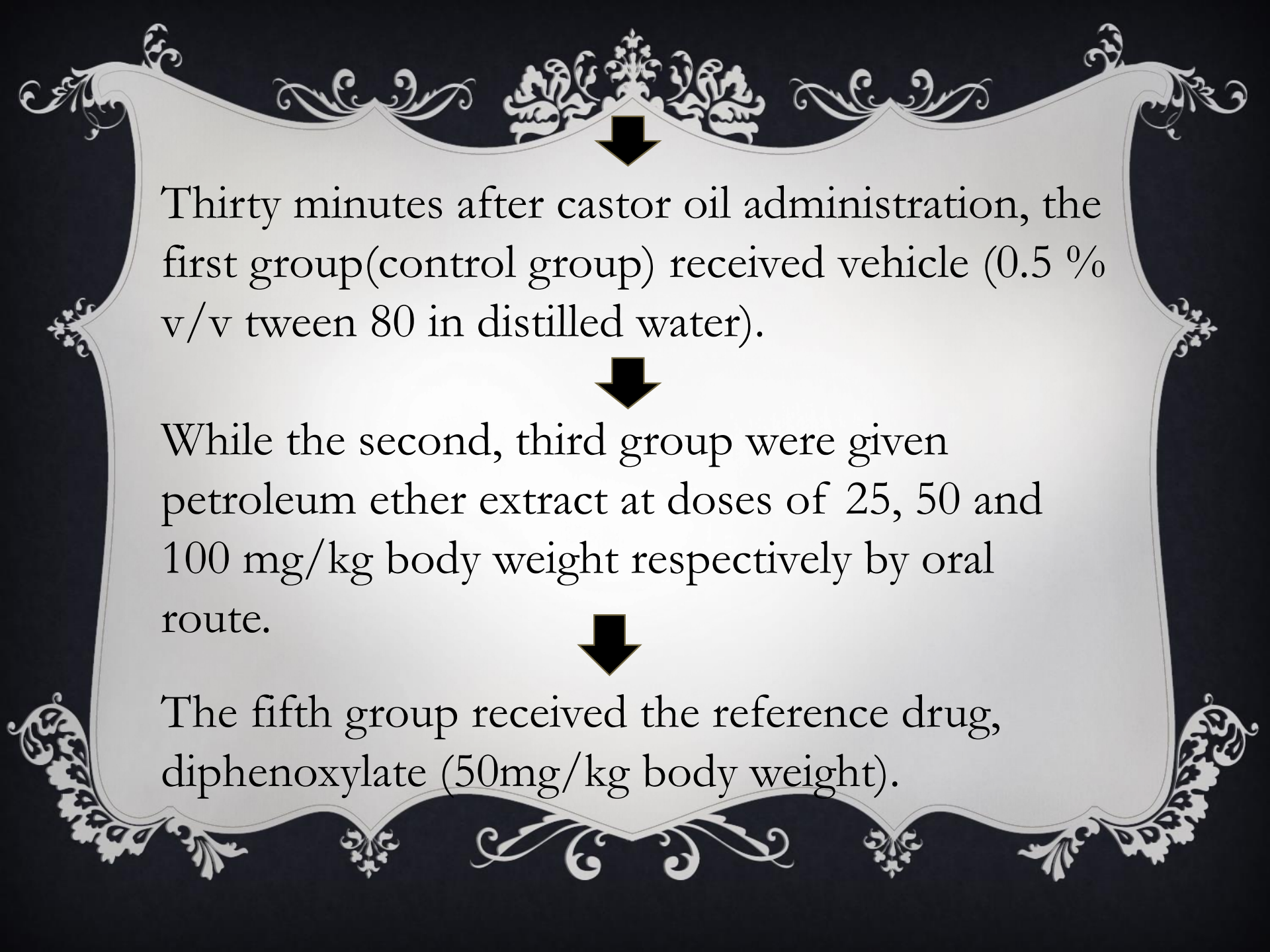
- Castrol oil -induced diarrhoea
- Gastrointestinal motility test
- Castor oil -induced enterpooling
- Magnesium sulfate -induced diarrhoea

## Castor oil –induced diarrhoea

- Rats were fasted for 18hrs and divided into five group of six animals per group.



- Castor oil at a dose of 1ml / animals orally, was given to all groups of animals for the induction of diarrhea.



↓

Thirty minutes after castor oil administration, the first group (control group) received vehicle (0.5 % v/v tween 80 in distilled water).

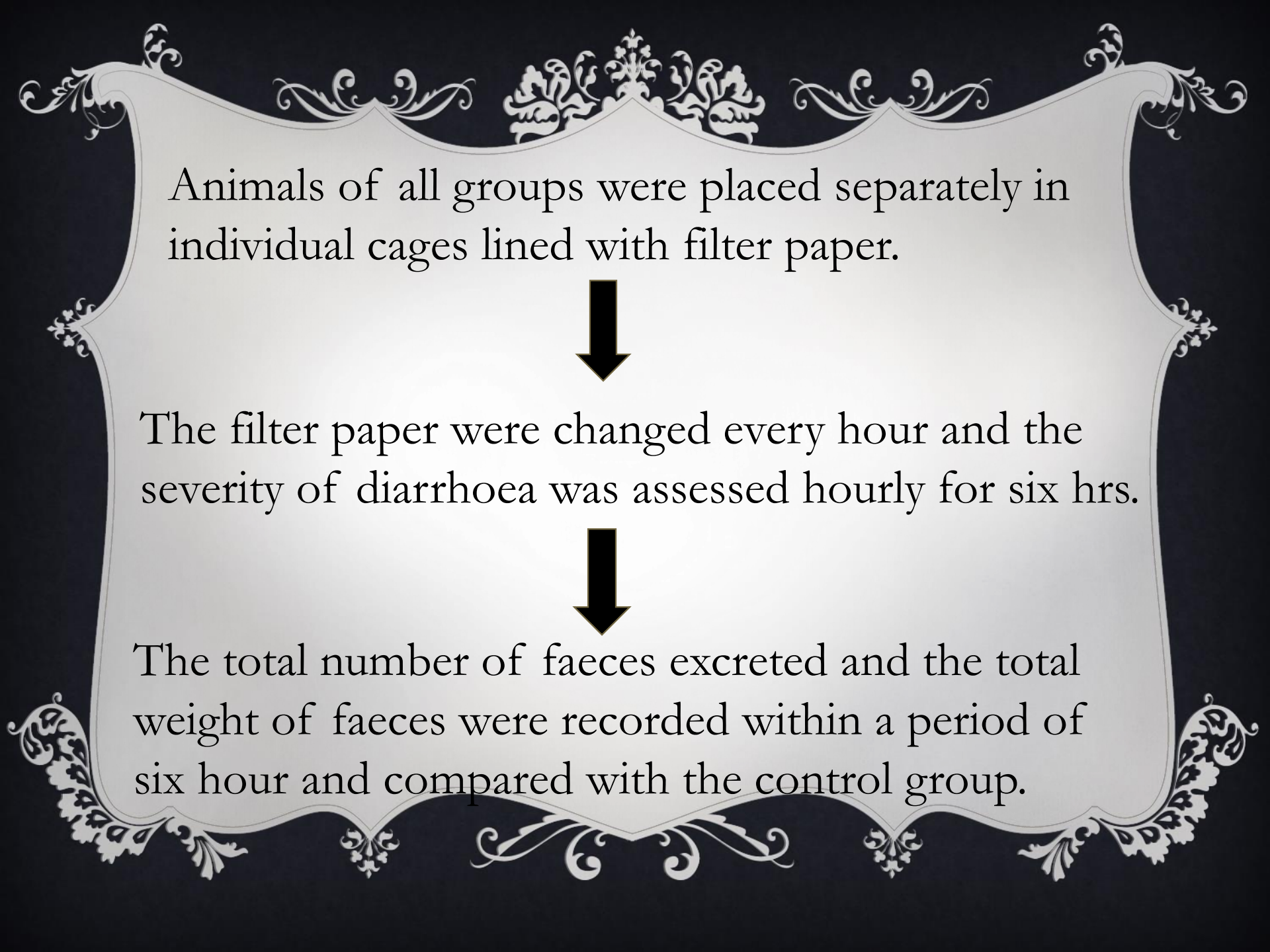
↓

While the second, third group were given petroleum ether extract at doses of 25, 50 and 100 mg/kg body weight respectively by oral route.

↓

The fifth group received the reference drug, diphenoxylate (50mg/kg body weight).





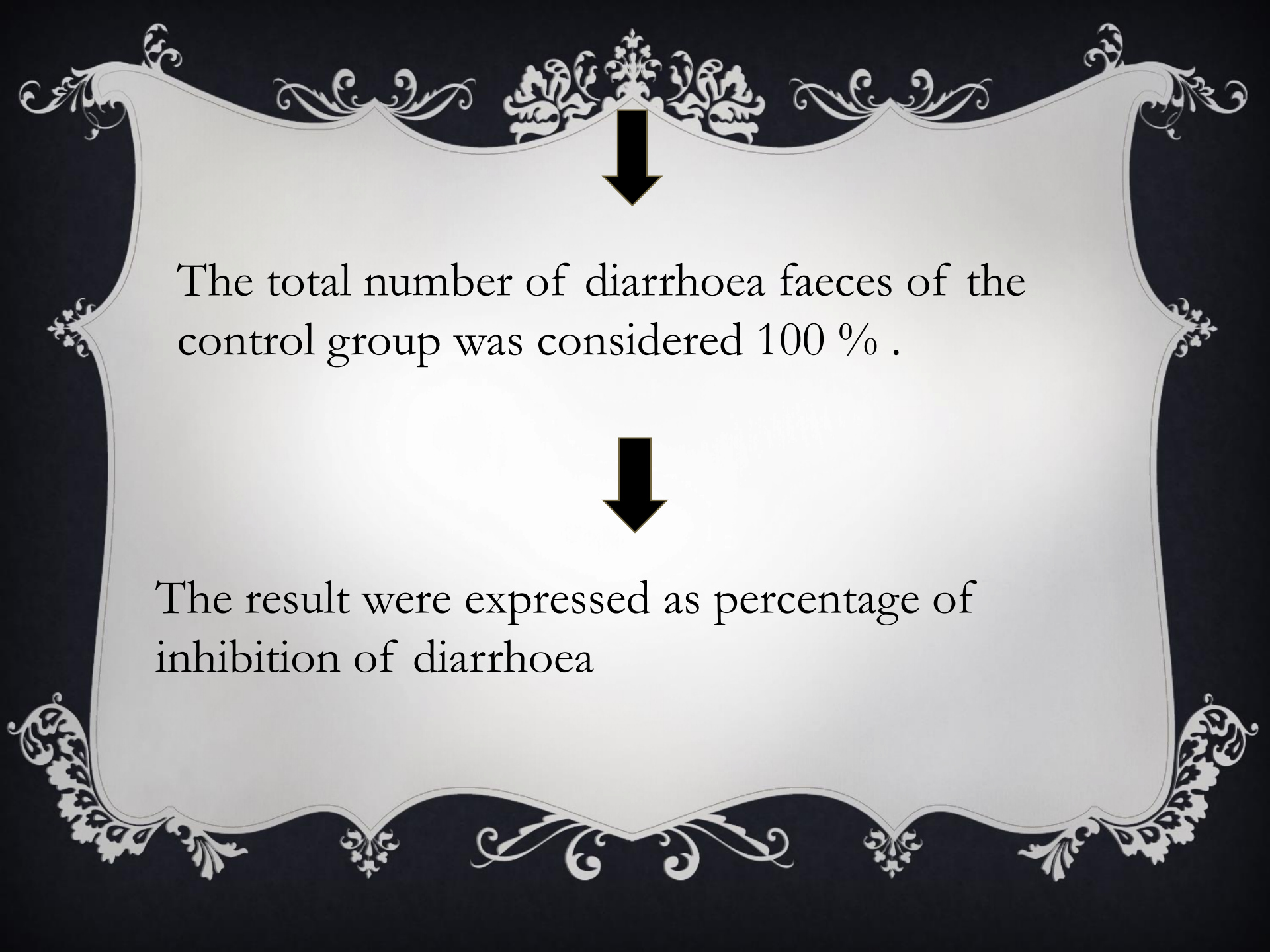
Animals of all groups were placed separately in individual cages lined with filter paper.



The filter paper were changed every hour and the severity of diarrhoea was assessed hourly for six hrs.



The total number of faeces excreted and the total weight of faeces were recorded within a period of six hour and compared with the control group.



The total number of diarrhoea faeces of the control group was considered 100 % .

The result were expressed as percentage of inhibition of diarrhoea

# Gastrointestinal motility test

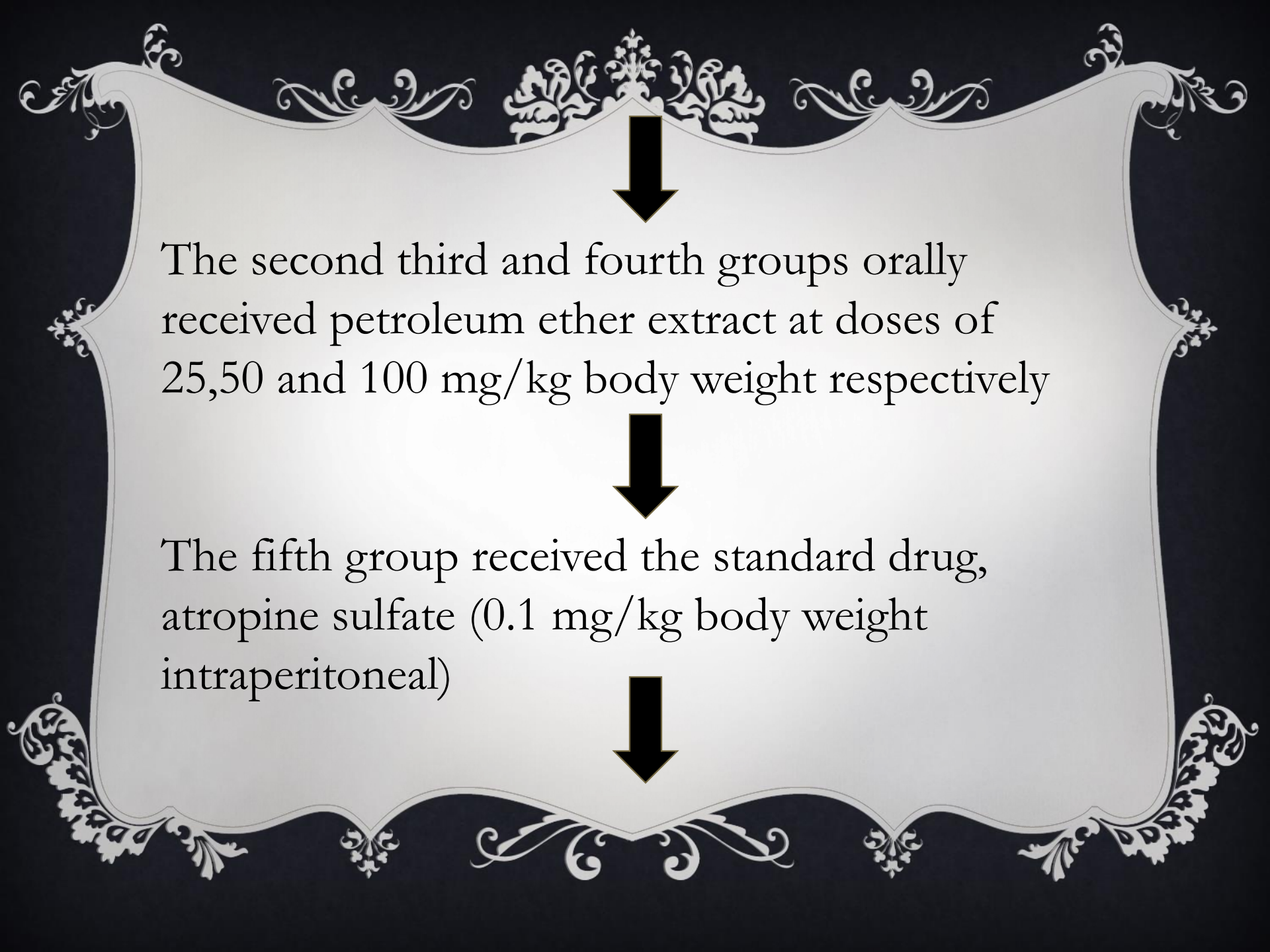
This experiment was done by using charcoal meal as a diet .

The rat were divided into five groups of six animals each and fasted for eighteen hrs. before the experiment.



The first group (the control group) was orally administered the vehicle (0.5% tween80 in distilled water ).





The second third and fourth groups orally received petroleum ether extract at doses of 25,50 and 100 mg/kg body weight respectively

The fifth group received the standard drug, atropine sulfate (0.1 mg/kg body weight intraperitoneal)

Thirty minutes later each animal was given 1 ml of charcoal meal (10% activated charcoal in 5% gum acacia) orally.



Each animal was sacrificed thirty minutes after administration of charcoal meal.



The distance covered by the charcoal meal in the intestine was expressed as a percentage of the total distance traveled from the pylorus to the cecum

# **Magnesium sulfate -induced diarrhoea**

Animals are fasted for a period of 12-18 hrs. and are grouped into control , reference and test groups.

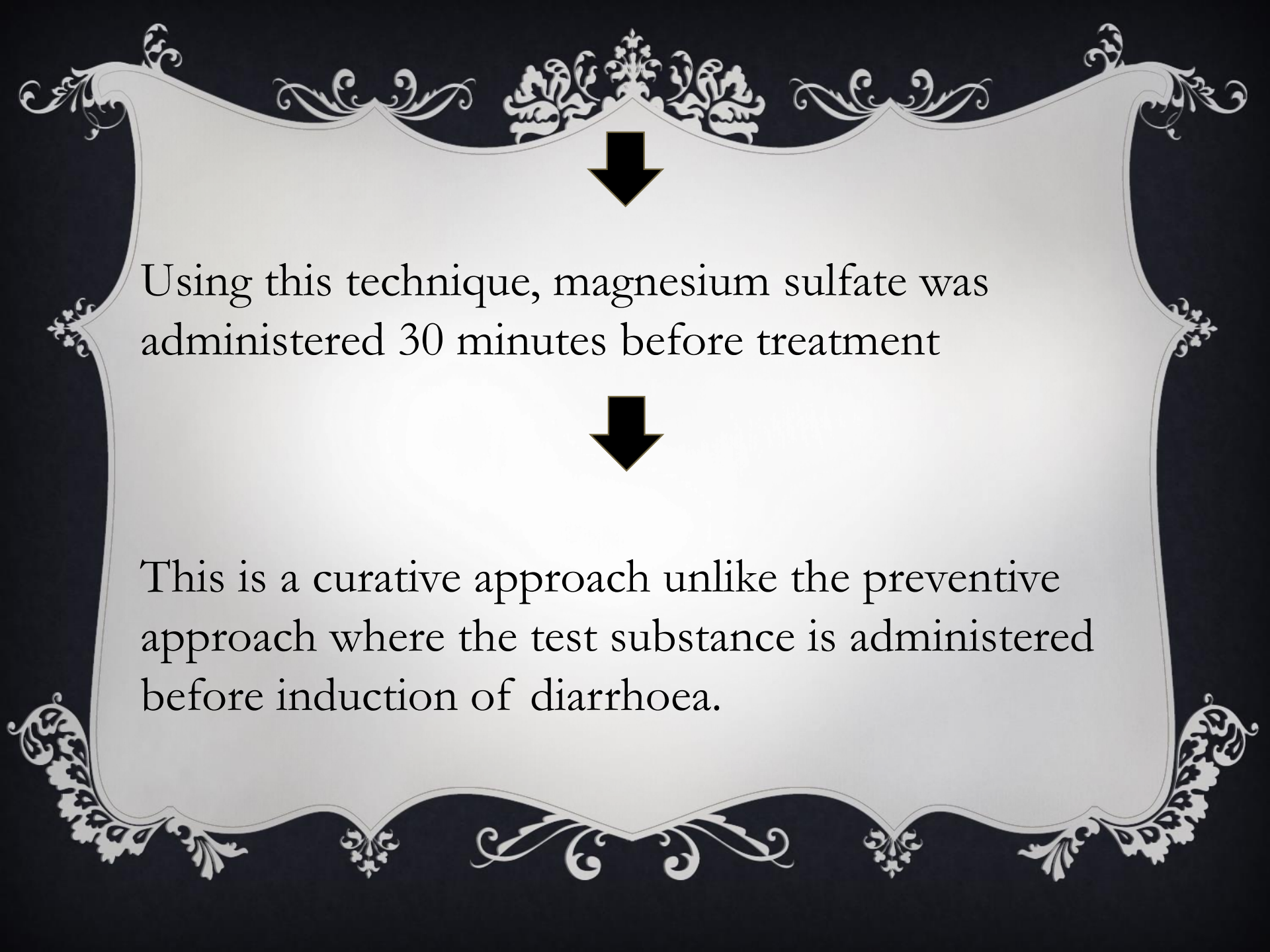


After 1 hrs. of treatment, animals are dosed with magnesium sulfate.



Then they are housed in their separate cages for 4 hrs.





Using this technique, magnesium sulfate was administered 30 minutes before treatment

This is a curative approach unlike the preventive approach where the test substance is administered before induction of diarrhoea.

## Evaluation

- With anti-diarrhoea agents dose –response curve are obtained for decrease of hyper – secretion (stool weight) and increase of the diarrhoea –free period are obtained
- Inhibitors of prostaglandin biosynthesis increase the diarrhoea free period do not affect early diarrhoea secretion.

## **Castor oil induced enteropoolingitr**

Intraluminal fluid accumulation was determined by the method of Boominathan et al. 2005

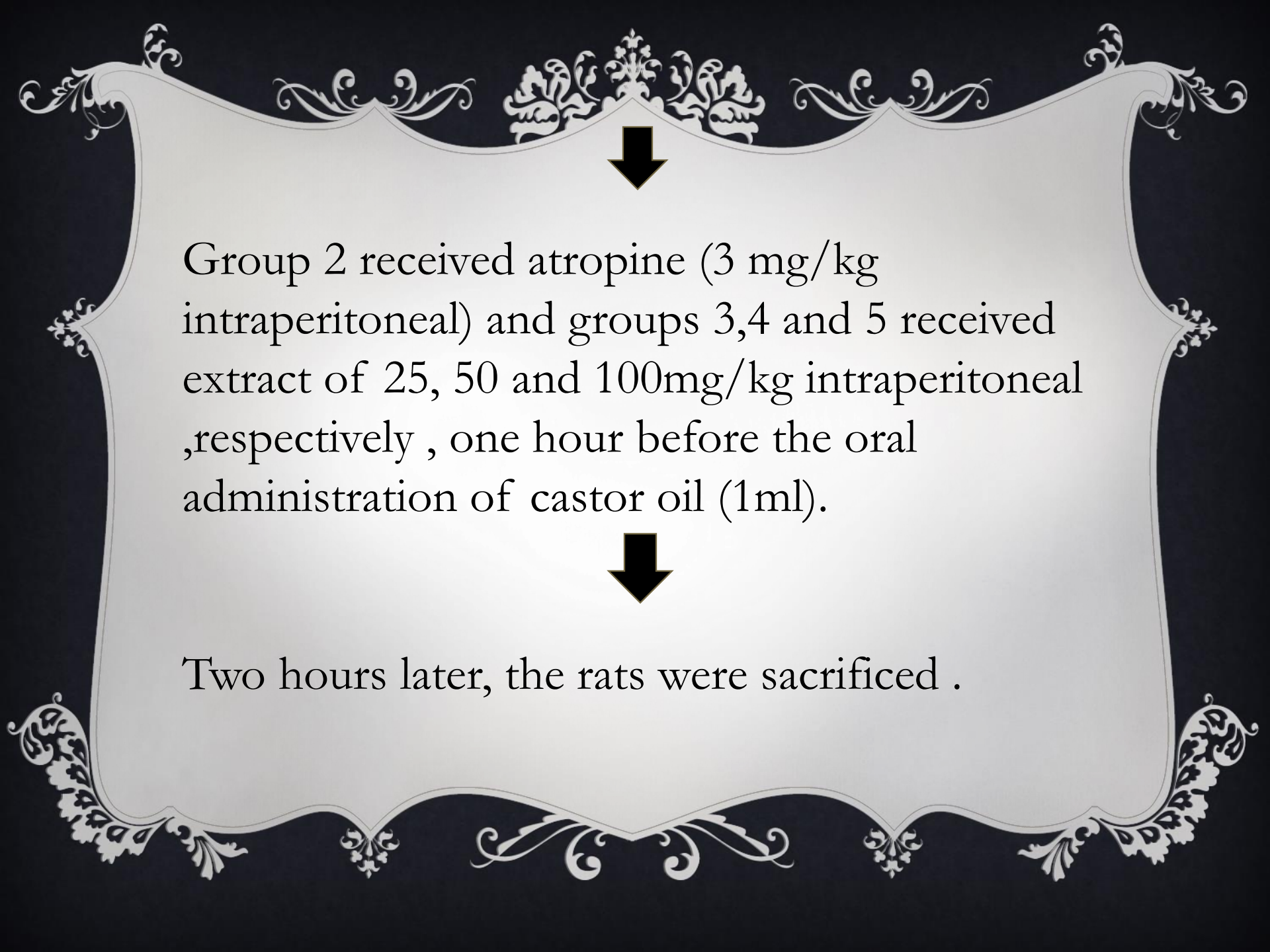


Overnight night fasted rats were divided into five groups of six animals each.



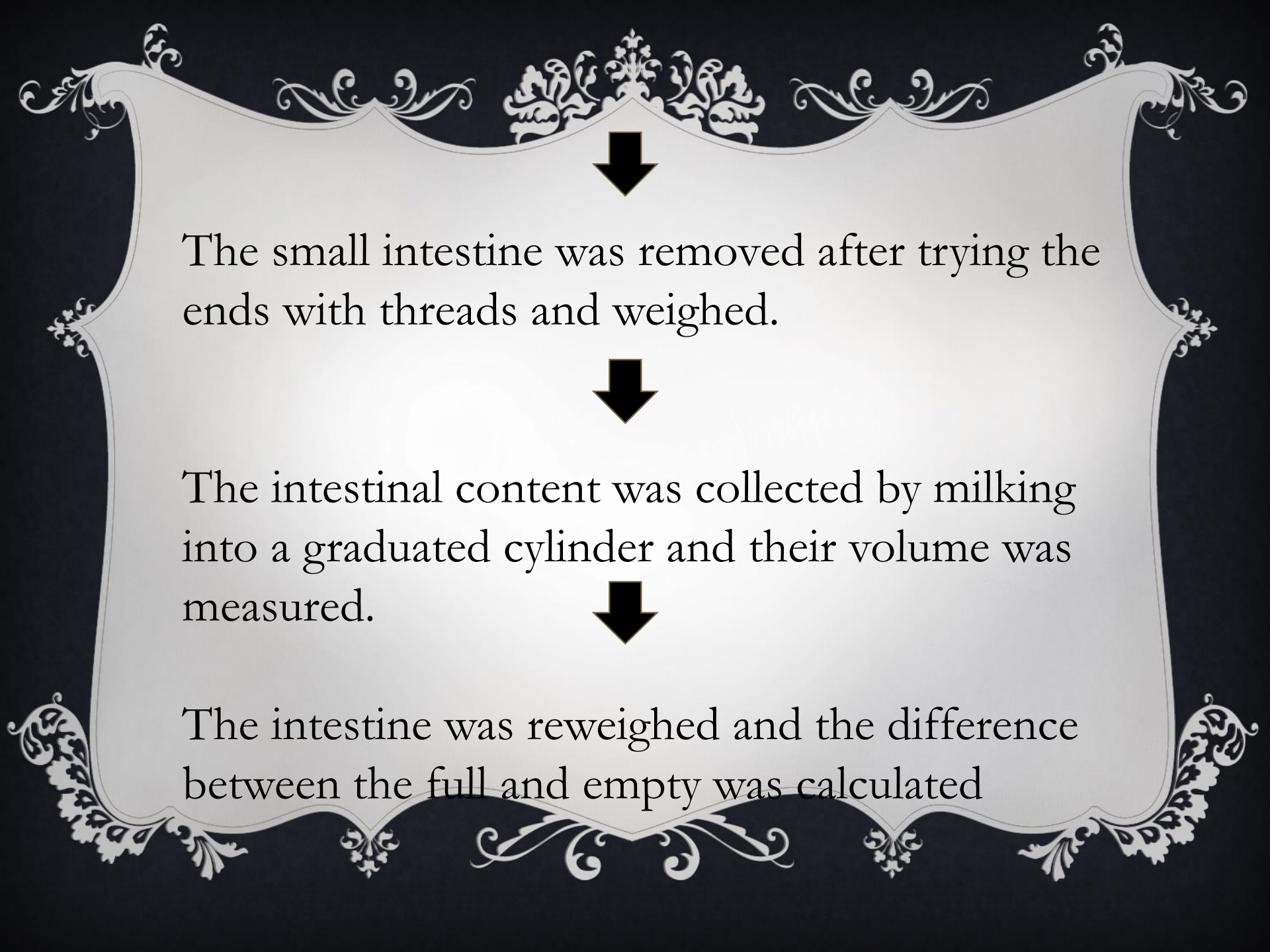
Group I which received normal saline (2ml/kg intraperitoneal) served as the control group.





Group 2 received atropine (3 mg/kg intraperitoneal) and groups 3,4 and 5 received extract of 25, 50 and 100mg/kg intraperitoneal ,respectively , one hour before the oral administration of castor oil (1ml).

Two hours later, the rats were sacrificed .



The small intestine was removed after tying the ends with threads and weighed.

The intestinal content was collected by milking into a graduated cylinder and their volume was measured.

The intestine was reweighed and the difference between the full and empty was calculated