STOOL EXAMINATION

DEFINITION

Human feces is called as STOOL.

Faeces / Feces is plural
of latin term *faex* meaning RESIDUE.

It is the waste residue of indigestible materials of an animal's digestive tract expelled through the anus during defecation.

COMPOSITION

- ¾ Water, ¼ Solid
- Undigested and Unabsorbed food
- Intestinal secretions, Mucous
- Bile pigments and Salts
- Bacteria and Inorganic material
- Epithelial cells, Leukocytes

COLLECTION

- Universal Precautions
- Stool should be collected in a dry, sterilized, wide mouthed container.
- It should be uncontaminated with Urine or any other body secretions.
- Properly named and always a fresh sample should be tested

MACROSCOPIC EXAMINATIO

- Volume <200gms/day
- Colour
- Consistency
- Odour
- Blood, Mucous
- Parts of parasite and Adult Parasite

COLOUR OF STOOL

Human fecal matter is normally yellowish brown i
colour which results from a combination of bile
and bilirubin.

VARIATIONS

- Bright Red/Maroon
- Blood streak
- Yellow
- Tan/Clay
- White
- Pale greasy

COLOUR OF FECES-in Infants

Exclusively breast fed infants pass loose and green or pasty and yellow stools.

Infants fed on cows' milk preparations pass stools of a paler yellow colour and of a much firmer consistency.

Babies fed on newer modified cows' milk preparations have clay coloured or greenish stools

CONSISTENCY OF STOOL

Type 1		Separate hard lumps, like nuts (hard to pass).
Type 2		Sausage-shaped but lumpy.
Type 3		Like a sausage but with cracks on the surface.
Type 4		Like a sausage or snake, smooth and soft.
Type 5		Soft blobs with clear-cut edges.

ODOUR OF STOOL

Basically depends on the pH of the stool and INDOLE and SKETOLE are the substances that produce normal odour formed by Intestinal bacterial fermentation and putrefaction.

A foul odour is caused by degradation of undigested protein and excessive carbohydrate

- Diarrhoea mixed with mucous and Blood is suggestive of Typhoid, Amoebiasis, Typhus, Large bowel Carcinoma.
- Diarrhoea mixed with mucous and Pus is suggestive of Ulcerative Collitis, Regional Enteritis, Shigellosis, Salmonellosis, Acute diverticullitis, Intestinal TB.
- Pasty stool with high fat content is suggestive of CBD Obstruction, Cystic fibrosis-butter stool.
- Translucent gelatinous mucous clinging to the

- Rice water stools which is colourless and almost devoid of odour is suggestive of Cholera.
- Stools may look like Redcurrant jelly in Intussusception.

PARASITE

- Round worm
- Hook worm
- Tape worm
- Pin worm
- Whipworm

MICROSCOPIC EXAMINATION

MATERIALS

- Microscope slides
- Cover slips
- Sodium chloride solution
- Lugol’s Iodine Solution
- Wooden applicator
- Fresh stool
- Gloves

SLIDE PREPARATION

SLIDES
- Saline Specimen Prpn.
- Iodine Specimen Prpn.

CONCENTRATION METHOD to detect Ova.

- A drop of warm Saline or Lugol's Iodine is place over a clean microscopic slide.
- About 2mg of stool sample should be taken an

PIN WORM EGG COLLECTION

Eggs of Pin worm – Enterobius vermicularis rarely appear in stools. These are usually collected in the folds of skin in perianal region.

COLLECTION

Cotton swab / Plaster patch – Anus especially in early morning – Dipped in Saline – Observed

EXAMINATION OF PARASITES

Warm stools are best for detecting Ova or parasites. Do not refrigerate the specimen.

Because of cyclic life cycle of parasites, three separate random stool specimens are recommended for examination.

NORMAL VALUES

- Undigested food materials – None to small amount
- Starch – None
- Eggs, Cysts, Parasitic fragments – None
- Yeasts – None
- Leukocytes – None

LEUKOCYTES IN STOOL

Large amounts of leukocytes is suggestive of Chronic Ulceratice Collitis, Chronic Bacillary Dysentry, Localised Abscess, Fistulas.

Mononuclear Leukocytes appear in Typhoid.

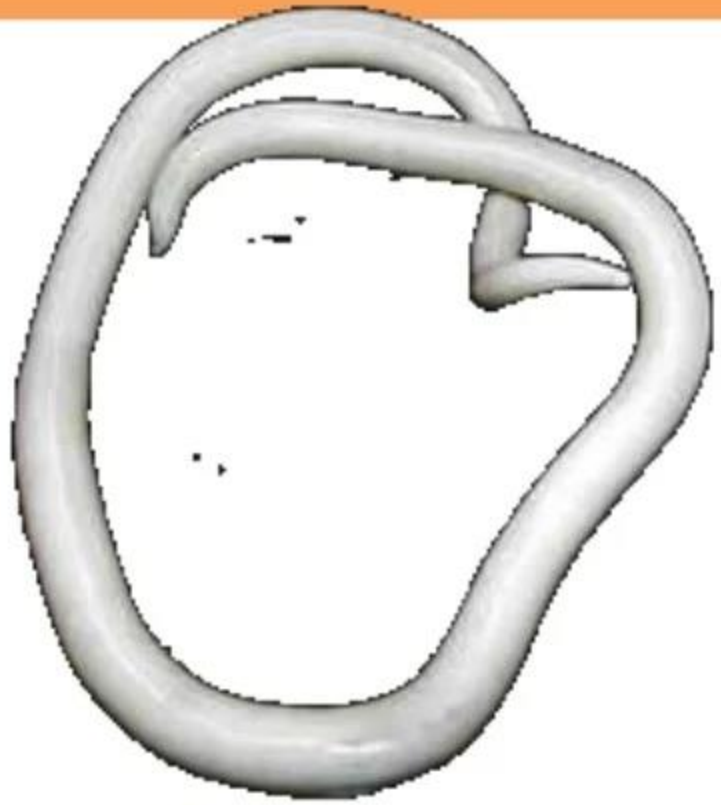
Polymorphonuclear Leukocytes appear in Shigellosis, Salmonellosis, Invasice E. coli diarrhoea, Ulceratice Collitis.

HOOKWORM

Ancylostoma duodenale.

ROUNDWORM

Ascaris lumbricoides



TAPEWORM

Taenia solium-Pork

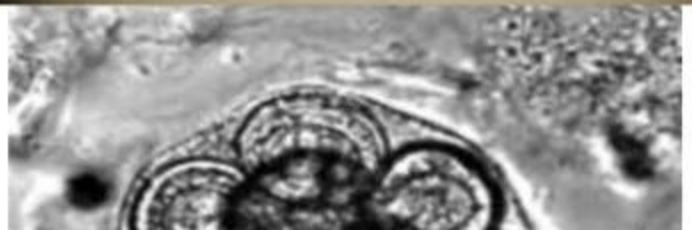
Taenia saginata-Beef

WHIPWORM

Trichuris trichura

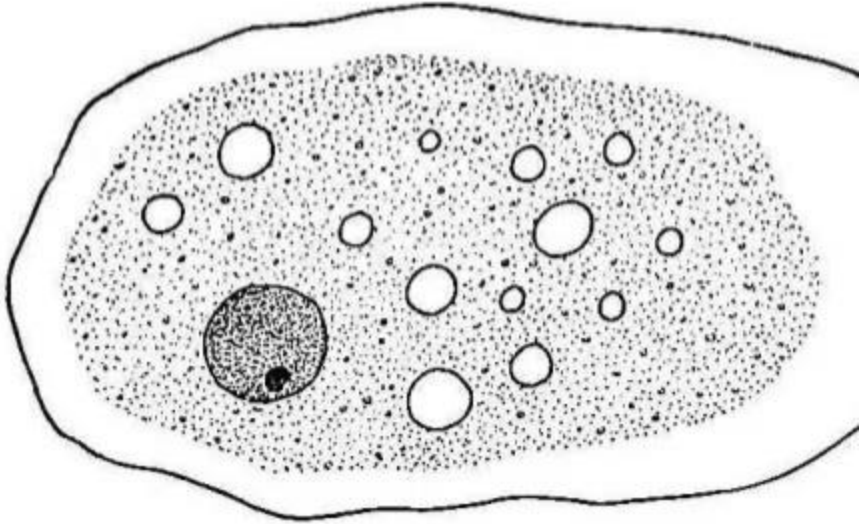
PINWORM

Enterobius vermicularis



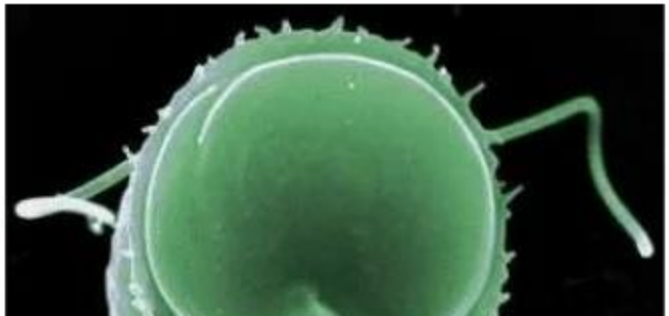
ENTAMOEBA

Entamoeba histolytica



GIADIASIS

Giardia lamblia



STOOL CULTURE

Normal Microbial flora of GI tract contains following organisms.

Gram –ve - E. coli, Enterobacter, Proteus, Pseudomonas aeruginosa, Bacteroides.

Gram +ve - Clostridia, Lactobacilli, Enterococci, Anaerobic streptococci.

Human feces contain approximately 10^{11} organisms

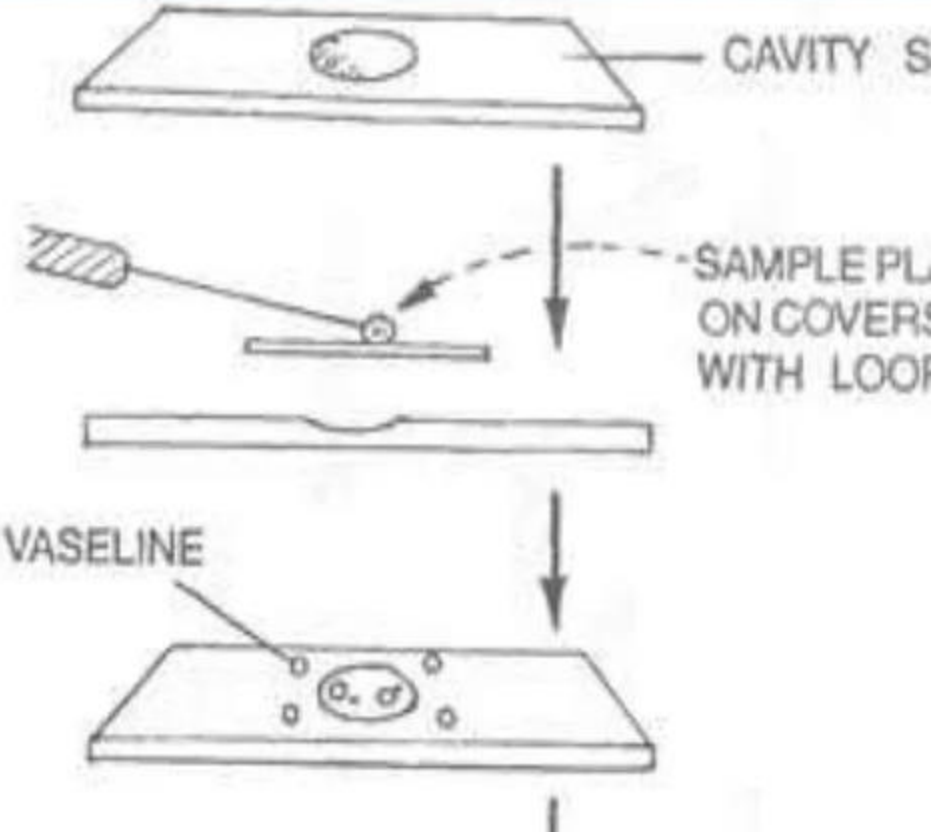
CULTURE MEDIAS

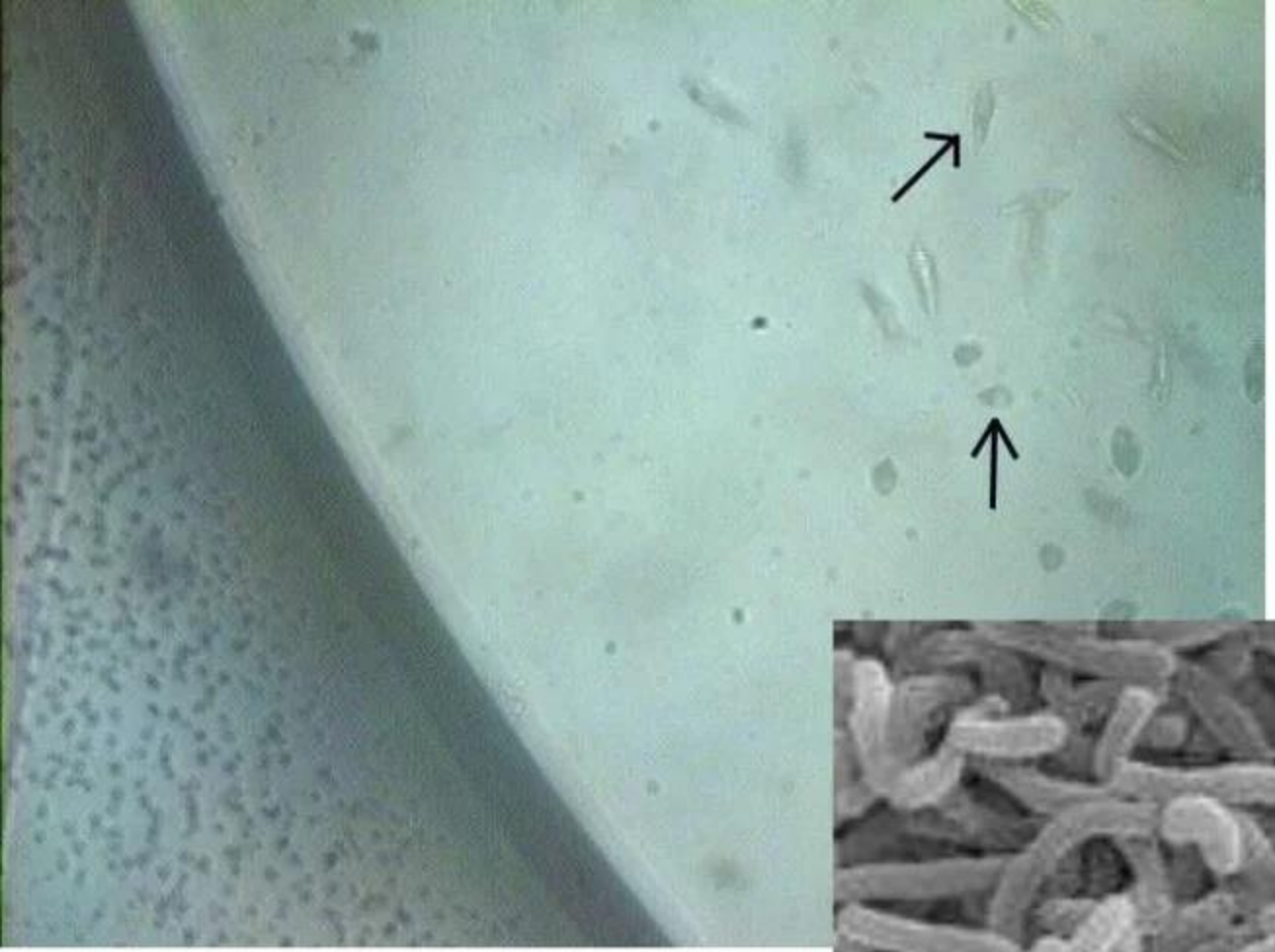
Culture media usually used is of AGAR and is done aerobically.

- XLD Agar media – Salmonella, Shigella.
- TCBS Agar media– Cholera.
- MacConkey media – Yersinia enterocolitica
- Campylobacter culture media for Campylobacte

HANGING DROP TEST

- Place a drop stool in the centre of a coverslip.
- Place a drop of water / vaseline at each corner of the coverslip.
- Invert a slide with a central depression over the coverslip.
- The coverslip will stick to the slide and when the slide is inverted the drop of bacterial





CHEMICAL EXAMINATION

NORMALCY

- Water – Upto 75%
- pH – 5.8 to 7.5
- Occult blood, RS – Negative
- Bile – Negative in Adults
  Positive in Children
- Sodium – 5.8 to 9.8 mEq/24hrs
- Chlorides – 2.5 to 3.9 mEq/24hrs

pH

Increased pH-ALKALINE

- Colitis
- Antibiotic use
- Villous adenoma
- Excess Protein in diet.

Decreased pH-ACIDIC

- Carbohydrate Malabsorption
- Fat Malabsorption
- Disaccharidase defficiency

OCCULT BLOOD

PRINCIPLE – BENZIDINE TEST

Perioxidase action of hemoglobin in bloo converts hydrogen peroxide to water and nascent oxygen. This oxygen oxidises benzidine in acid medium to form green to blue coloured complex.

METHOD

Benzidine – Glacial acetic acid – Hydrogen peroxide –

OCCULT BLOOD cont…

Found in Ulcers,

Diverticullitis,

Ulcerative Collitis,

Diaphragmatic Hernia,

Adenoma,

CA Colon, Gastrium

FAT IN STOOLS

Increased Fats is associated with Malabsorption Syndromes

- Obstructive Jaundice
- Non tropical sprue/Coeliac Sprue
- Crohn’s disease
- Cystic Fibrosis

REDUCING SUBSTANCES

Tested for RS especially in infants with Chronic diarrhea to rule out Lactose Intolerance.

Stool will be positive for RS in variety of condition especially in Rota viral Infection in Infants.

MALA / PURISHA

- Mala – 7 Anjali Pramana
- One among ASHTA Sthana Pariksha
- Aama / Pakwa Purisha
- Tila Pishtha Nibha Varchas……
- Purishaja Krimi
- Purisha Virajaneeya Dravyas

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THANK YOU