

STOOL, ITS EXAMINATION AND ITS CLINICAL IMPLICATION- REVIEW ARTICLE

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ABSTRACT

The constituents of body, which can vitiate body (when they accumulate in large amounts or decrease), are called as *Malas*. *Malas* are those constituents of the body which are regularly eliminated from the body and thus keep the body clean. **Synonyms:-** *Shakrit, Upveshana, Vit, Gutha, Varch as* are the synonyms. **Qualities:** *Purisha* is a solid waste product. Colour of *purisha* is yellowish to brown. Consistency depends on the ingested food and water intake. *Sama purisha* is heavier with foul smell and it sinks in water while *Nirama purisha* is lighter and floats on the water. So, all these factors i.e.:- colour, consistency and odour is of great clinical significance. Because colour, consistency and odour of *purisha* changes in many diseases like *Kamla* (jaundice), *Grahani, Atisara* (loose motions), *Pravahika* etc. So, keeping all those factors in view, it has been tried to concentrate on the causes of such problems and provide a healthy citizen to the society who is free from all these diseases. This work is a fact finding activity purely based on fundamental research. No hypothesis is proposed or tested. This work may have no immediate or planned application but may later result into further research of an applied matter.

Keywords: *Shakrit, Kittabhag, Pakwashye, Aavshambh, Defecation, Anal sphincter.*

INTRODUCTION

“Pakwashya Tu Prapatasya Shoshyemanyasye Vahinna Paripinditpakavasye Vayu Syat Katubhavata” [Charak Chikitsa Sthana 15/11]

After the *paka* of the food in *Aamashye, Pachnashyema* and *Pakavashya*, the resultant end product i.e. :-The *Nissar* that comes out through the *Mala-dwar* is termed as ‘*Purisha*’.

“Kittam Annasye Vinmutram”. [Charak Chikitsa Sthana 15/18]

Purisha (faeces) is the waste product of food.

Panchbhautika constitution of purisha:- *Purisha* predominantly consists of *agni* and *vayu* mahabhuta.

“Purisham parthivam” (Bhanumati on Sushruta sutrasthan15/8)

Faeces are the waste product of food. As per ayurveda, site of formation:-

“Purishvahanam srotsam pakvashyo mulam sthulgudam” (Charak vimansthana 5/8)“Tatra vatvaschonirasnam sthulantra-pratibaddam gudam naam marmamch” (Sushruta sharirsthana 6/25)

Purishvaha srotas is a site of formation and excretion of *purisha*.

Pakvashaya(large intestine) and *sthula guda* (anal canal) are the roots of *purishavaha srotas*. *Purisha –dhara kala* plays vital role in the formation of *purisha*. *Purishadhara kala* is also called as “*Mala dhara kala*”.

“*Panchmi purishdharanam, ya Ante kosthe malam Abhivibhajyte pakvashyastha*” [*Sushruta Shareer Sthana 4/16*] “*Yakrit samantat koshte ch tathaantrani Samashrita Undukastham vibhajte Malam Maladhara kala*” [*Sushruta shareer Sthana 4/17*]

Site of *Mala-dhara kala* is the *Antra*(colon) which is anatomically related to the hepatic region and *Unduka*(caecum). *Mala-dhara kala* separates solid and liquid constituents of *kitta*.

Quantity-

“*Sapta Anjali purishasye*” [*Charak shareer Sthana 7/15*]

Quantity of *purisha* is eight *anjali*

Functions of *purisha*-

“*Avshtambh purishasye*” [*Ashtang Hridaya Sutrasthana Sthana 11/5*]

Avashtambha (to give support) is the function of *purisha*.

Physiology of Defecation:-

Faeces are stored in large intestine. When large intestine is full of faeces, then mass peristalsis apper in colon. Due to mass peristalsis, faces are pushed from sigmoid colon into the rectum. Stretching of rectal wall initiates defecation reflex. Due to shortening of rectum, increased abdominal pressure, contraction of diaphragm and abdominal muscles, internal anal sphincter opens up and faeces is excreted through anus. External anal sphincter is under voluntary control. Voluntary relaxation of external anal sphincter causes faecal excretion.

DISCUSSION

Under discussion, stool or faeces is to be defined. Then, the method of collection of faeces is explained. Which sample of faeces is to be collected and what are the samples to be avoided is highlighted.

Stool Analysis

Stool is the waste residue of indigestible material (cellulose during the previous four days), Bile pigments and salts, Intestinal secretions, Including mucus, Leukocytes that migrate., Epithelial cells that have been shed, Bacteria and inorganic material (10-20%) chiefly calcium and phosphates. Undigested and unabsorbed food.

Random Collection

Universal Precaution, Collect stool in a dry and clean container, Uncontaminated with urine or other body secretions, such as menstrual blood, Collect the stool with a clean tongue blade or similar object, Deliver immediately after collection .

Ova and Parasites Collection

Warm stools are best for detecting ova and parasite. Don't refrigerate specimen for ova and parasite, If the stool collected in 10% formaline or PVA fixative, storage temperature is not critical.

Enteric Pathogen Collection

Some coliform bacilli produce antibiotic substances that destroy enteric pathogen. Refrigerate specimen immediately, a diarrheal stool will surely give accurate result, A freshly passed stool is the specimen of choice, Stool specimen should be collected before antibiotic therapy or as early in the course of the disease.

Interfering Factors

Patients receiving tetracyclines, antidiarrheal drugs, barium, bismuth, oil, iron or magnesium may not yield accurate result, Bismuth found in toilet interferes with results, do not collect stool from the toilet

bowl. A clean, dry bedpan is the best, Life-style, personal habits; environments may interfere with proper sample procurement.

EXAMINATION-

As per *Ayurveda*, Acharaya Yogaratnakar has included *Mala pariksha* under *Ashtvidha Pariksha*.

Normal Values In Stool Analysis:-

Macroscopic Examination- Under this, the amount in 24 hrs, colour of the stool, odour, consistency, size are shape are described.

The Amount in 24hrs is 100-200g/day, Colour is Brown, Odour Varies with PH of stool & depends on bacterial Fermentation, and Consistency is Unusual to fiber, Size and shape - Formed

Microscopic Examination:- Under this, following points are to be considered.

Fat is Colourless, natural fat (18%) and fatty acid crystals and soaps, undigested food - None too small, Meat fibers, Starch and trypsin -None, Eggs and segment of parasites-None, Yeast -None, Leukocytes - None.

Normal values in stool analysis:-

Chemical Examination- Under Chemical Examination, Water is upto 75% PH is 6.5-7.5% Occult blood is Negative Urobilinogen 50-300 μ g/24hrs Prophyryns Coprophyrins (400-1200 μ g/24hrs) , Uroprophyryns(10-40mg/24hrs) Bile ,In children(negative),In adults(positive) Trypsin positive in small amounts in adults,in greater amounts in normal children Sodium 5.8-9.8mEq/24hr Chloride 2.5-3.9mEq/24hr Pottasium 7-20.7mEq/24hr Lipids 0-6g/24hr

Clinical implications:-

Fecal consistency may be altered in various disease states:-

a)Diarrhoea mixed with mucous and red blood cells is associated with:-

1. Trypsin

2. Typhoid

3. Cholera

4. Amoebiasis

5. Large bowel cancer

b) Diarrhoea mixed with mucus and white blood cells is associated with:-

1. Ulcerative colitis

2. Regional enteritis

3. Shigellosis

4. Salmonellosis

5. Intestinal tuberculosis

C) Pasty” stool is associated with a high fat content in the stool:-

1. A significant increase of fat is usually detected on gross examination.

2. With common bile duct obstruction,the fat gives the stool a putty-like appearance

3. In cystic fibrosis,the increase of neutral fat gives a grease,butter stool appearance.

Stool Odour

Clinical Implications:-

1. A foul odour is caused by degradation of undigested protein.

2. A foul odour is produced by excessive carbohydrate ingestion.

3. A sickly sweet odour is produced by volatile fatty acids & undigested lactose.

Stool PH

Normal value-Neutral to acid or alkaline

Clinical Implications:-

1. Increased PH (alkaline) in:-

a) A protein break down adenomac colitis.

b) Villous

c) Antibiotic

2. Decreased PH (acid):-

a) Carbohydrate malabsorption

b) Fat malabsorption

c) Disaccharide deficiency

Stool Color

Normal Value -Brown

Clinical Implication:-

1. Yellow to Yellow-green - severe diarrhea

2. Green - severe diarrhea bile
3. Tan or clay colored -blockage of the common bile duct
4. Maroon-to-red-to-pink -possible result of bleeding from the lower G.I.T
5. Blood streak - on the outer surface of usually indicates haemorrhoids or anal abnormalities.

Blood in stool

Normal value – Negative.

Clinical Implications:-

- Dark red to tarry black indicates a loss of 0.5 to 0.75 ml of blood from the upper G.I.T.
- Positive for occult blood may be caused by:-
 - a) Ca of colon
 - b) Ulcerative colitis
 - c) Adenoma
 - d) Diaphragmatic hernia
 - e) Gastric Ca

Mucous in stool

Normal value – Negative for mucous.

Clinical Implications:-

1. Translucent gelatinous mucous clinging to the surface of formed stool occurs in:-

- a) Spastic constipation
- b) Mucous colitis
- c) Emotionally disturbed patients

2. Bloody mucous clinging to the surface suggests:-

- a) Neoplasm
- b) Inflammation of the rectal canal

3. Mucous with pus and blood is associated with:-

- a) Ulcerative colitis.
- b) Bacillary dysentery.
- c) Ulcerative Ca of colon
- d) Acute diverticulitis

Fat in Stool

Normal value-Fat in stool will account for upto 20% of total solids.

Clinical Implication:-

1. Increased fat or fatty acids is associated with the Malabsorption syndromes

- a) Non tropical sprue
- b) Crohn's disease
- c) Whipple's disease
- d) Cystic fibrosis
- e) Enteritis and pancreatic diseases.

Urobilinogen in stool

Normal value:- 125-400 Ehrlich units/24 hrs.

75-350 Ehrlich units/100 gm.

Clinical Implications:-

- Increased values are associated with hemolytic anaemias.
- Decreased values are associated with:-
 - a) Complete biliary obstruction.
 - b) Severe liver disease, infectious hepatitis.
 - c) Oral antibiotic therapy that alters intestinal bacterial flora.

Bile in stool

Normal value:- Adults- Negative

Children may be positive.

Clinical Implications:-

1. Bile may be present in diarrheal stools.
2. Increased bile levels occur in haemolytic anaemia.

Trypsin in stool

Normal value:-Positive in small amounts in 95% of normal persons.

Clinical Implications:-

1. Decreased amounts occur in:-
 - a) Pancreatic deficiency.
 - b) Malabsorption syndromes.

Leukocytes in stool

Normal value:- Negative clinical implications.

1. Large amounts of leukocytes in:-

- a) Chronic ulcerative colitis.
 - b) Chronic bacillary dysentery.
 - c) Localized abscess.
 - d) Fistulas of sigmoid rectum or anus.
2. Mononuclear leukocytes appear in Typhoid.
3. Polymorphonuclear leukocytes appear in:-
- a) Shigellosis
 - b) Salmonellosis
 - c) Yersinia coli diarrhea
4. Absence of leukocytes is associated with:-
- a) Cholera
 - b) Non specific diarrhea
 - c) Viral diarrhea
 - d) Amebic colitis

Porphyryns in stool

Normal value: - Co-protoporphyrins 400-1200 µg/24 hr.

Uro-protoporphyrins 10-40 µg/24 hr.

Clinical Implications:-

1. Increased fecal co-protoporphyrins is associated with:-
 - a) Coproporphyrins(hereditary)
 - b) Protoporphyrin
 - c) Hemolytic anaemia

Stool electrolytes:-

Normal values:-

- a) Sodium -> 5.8 – 9.8 mEq/24 hr.
- b) Chloride-> 2.5-3.9 mEq/24 hr.
- c) Potassium->15.7-20.7mEq/24 hr.

Clinical Implications:-

1. Iodopathic proctocolitis -> Sodium and Chloride, Normal Potassium.
2. Cholera -> Sodium and Chloride.

CONCLUSION

So, keeping all these points in view, it is concluded that *Mala(Purisha)* i.e.:- Stool is one of the important functional units of body. Also told in *Ayurveda* as one of the *Mulam* of *Shareer*. So, any change or disturbance in the physical or chemical proper-

ties of stool such as change in consistency, PH, odour, colour etc. can lead to the diseased condition of a person. So, *Anurakshan* of *Mala* is of prime importance for the physician and for the maintenance of the health of a person.

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