

**B.PHARMACY**  
**8<sup>TH</sup> SEMESTER**  
**PHARMACOLOGY-IV(BPHM-804)**  
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**MODULE- 3<sup>rd</sup>**

**Interpretation of Clinical Laboratory test:**

**Parameters:**

Haematological parameter  
Urine examination  
Stool Examination  
Blood sugar  
Blood cholesterol  
Sperm count  
Common enzymes Parameters

**Haematological parameter:**

1. Erythrocytes Leucocytes : WBC: Basophils  
Eosinophils  
Monocytes

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Lymphocytes

Neutrophils

Thrombocytes

2. Haemoglobin ESR :MI, RA, TB, anaemia, cancer, pneumonia, menstruation Sickel cell anaemia

3. Clotting time : Haematological parameter

Sr. No.	Types of parameter	Men	women	children
1	RBC	4.5	5.5 million/mm <sup>3</sup> 3.5	5.5 million/mm <sup>3</sup> 4
2	WBC	Normal range 4000-11000 cell/mm <sup>3</sup>	Normal range 4000-11000 cell/mm <sup>3</sup>	Normal range 4000-11000 cell/mm <sup>3</sup>
<b>WBC</b>		<b>%count</b>	<b>actual count</b>	
i	Basophils	0-1	0-100	
ii	Eosinophil	1-4	40-400	
iii	Monocytes	4-8	160-800	
iv	Lymphocytes	23-35	1000- 3500	
v	Neutrophil	60-70	2500-7000	
3	Thrombocytes	Platelet	1,50,000 – 3,00,000	
4	Haemoglobin	13-18 g/dl	11.5-16.5 g/dl	7.5- 14.5 g/dl
5	ESR	0-15 mm/ hr	0-20 mm/ hr	0-10 mm/ hr

### Haematological parameter :

- ✓ Erythrocytes: - Polycythaemia, Chronic heart disease, Cholera, Burn. In Pregnancy anaemic
- ✓ Leucocytes: Bacterial infection, fever, tonsil, diptheria , smallpox, cold, pregnancy, newborn infant, emotional disturbance, menstruation, fear
- ✓ WBC
  - I Basophils: mumps, chickenpox, viral hepatitis, TB, Pertusis , granulocytic and lymphocytic leukaemia, breast cancer
  - II Eosinophils : allergic disorder, skin disease, cholera, scarlet fever, tumours of ovary and uterus in stress , and acute infection

Monocytes: TB, monocytic leukemia , ulcerative colitis, malaria

Lymphocytes: lymphocytosis in children, whooping cough, syphilis, TB, Breast cancer  
lymphocytopenia indicates cardiac failure , stress, AIDS, renal failure

Neutrophils: Rheumatic fever, RA, Gout, MI, Gangrene

3. Thrombocytes: TB, cirrhosis, acute haemorrhage, anaemia Thrombocytopenia in TB, myeloproliferative disorder, spleen enlargement, septicemia , haemorrhage

4. Haemoglobin

5. ESR

6. Clotting time:

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### Urine Examination:

Sr No. Abnormal constituent Disorder  
 1 Sugar (Glucose) DM, Endocrine disorder  
 2 Protein (Albumin) Normal ( 50-80 mg/L) In kidney damage albumin present in urine  
 3 Bile Pigments Like bilirubin Jaundice  
 4 Ketone Bodies (Acetone, Acetoacetic acid) Normal ( 3-15 mg in 24 hrs.) DM, Starvation , ketosis

Sr. No.	Abnormal constituent	Related disorder
1	Sugar (Glucose)	DM, Endocrine disorder
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3	Bile Pigments	Like bilirubin Jaundice
4	Ketone Bodies (Acetone, Acetoacetic acid) Normal ( 3-15 mg in 24 hrs.)	DM, Starvation , ketosis
5	Blood Cell	Haematuria, TB, Cancer, Acute inflammation of urinary organs, haemolysis Urine Examination

### Urine Analysis:

Sr. No.	Test	Normal Value	Related disorder
1	Volume	700-2500 ml	Increase in Polyuria, DM, Diabetic Insipidus Decrease in Diarrhoea, vomiting, Fever, Cardiac Failure
2	Appearance	Clear form, pale yellow – deep gold	Red indicates Blood yellow – teracycline Cloudy – pus or Phosphate
3	Specific Gravity	1.003 to 1.025	Increase in DM, Nephrosis Decrease in Diabetic insipidus
4	PH	4.5 – 9.0	Alkalosis

### Stool Examination:

Sr. No.	Test Significance
1	Semi solid is normal Watery stool chances of infection
2	Brownish colour normal Due to diet and drug colour may change
3	Putrefactive action of bacteria leads to an odour Very foul odour is present in ulceration, Malignant lesion is in rectum
4	Very small amount of mucous in normal Large amount of mucous in

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	dysentery, Colitis, amoebiasis
5	Microscopic evaluation is done for presence RBC, Pus cells and common parasites In Amoebic dysentery RBC, Mucous and Pus cells are present Tapeworm, Flatworm, nematoda , round worm, bookworms, Entamoeba histolytica , E.Coli .

Blood Sugar	Normal fasting blood glucose 60-100/100ml	DM, Hyperthyrodism , Hepatic disorder, hyperglycaemia
Blood Cholesterol	100-240 mg/100ml <300 mg/100ml	coronary disease Nephrosis , lipemia , DM, Hypothyrodism , Hepatic disorder Decrease Hyperthyrodism , pernicious anaemia, wasting disease, acute infection, hepatocellular damag
Sperm count	Normal 60-150 million/cc >60	show infertility

### Common Enzymes:

#### 1. Phosphatase:

Splitting Phosphoric acid from mono phosphoric acid ester. They are two type

i. alkaline phosphatase and acid phosphatase Normal range of acid phosphatase is 1-5 KA/100ml units. it increase - prostatic cancer

ii. Alkaline phasphatase is 29- 92 IU/L . higher level will be in ricketts, osteomalacia , impaired absorption of vit D, calcium, jaundice

2. Serum Glutamate Oxaloacetate Transaminase: Normal is 35 SF (sigma frantel ) units/100ml Increase in Toxic hepatitis, cirrhosis, jaundice, cardiac disease, and muscle damage.

#### 3. SGPT:

It catalyzes the conversion of L alanine to pyruvate Normal 35 SF units/100ml The level is increased in liver cell damage

4 . Diastase in urine: Act on starch and convert into maltose Normal level is 3-32 units Increase in pancreatitis

5. Lactic acid dehydrogenase

6. Creatinine phosphokinase

## THERAPEUTIC DRUG MONITORING

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## Essential Medicine List Concept and Rational Use of Medicine