

Lab sheet #4

-Estimation of Serum Creatinine, Urine Creatinine and Creatinine Clearance -

Objectives:

- To estimate creatinine in serum and urine.
- To calculate creatinine clearance value.

Method:

1- Set up a series of test tube as follows:

Chemical	Standard		Test (serum)		Test (urine)		Blank
	(A)	(B)	(C)	(D)	(E)	(F)	
Water	1.5 ml	1.5 ml	1.5 ml	1.5 ml	1.5 ml	1.5 ml	2 ml
Standard (serum)	0.5 ml	0.5 ml	-	-	-	-	-
Serum Sample	-	-	0.5 ml	0.5 ml	-	-	-
Urine Sample	-	-	-	-	0.5 ml	0.5 ml	-
Picric acid	6 ml	6 ml	6 ml	6 ml	6 ml	6 ml	6 ml

- 2- Cover the tubes with foil and mix well.
- 3- Immerse the tubes carefully in the boiling water bath for **40 seconds**, then cool it under tap.
- 4- Pipette **0.6 ml of NaOH** to all tube.
- 5- Let the tubes stand for **20 min.**
- 6- Read the absorbance at **520 nm.**

Results:

Tube	Standard (3mg/dl)		Test (Serum)		Test (Urine)	
	(A)	(B)	(C)	(D)	(E)	(F)
Absorbance at 520 nm						
Mean of Absorbance						

Calculations:

1-Serum creatinine =

(Mean absorbance of **serum** / Mean absorbance of standard) X concentration of **standard** =
 mg/dl

2-Urine creatinine =

(Mean absorbance of **urine** / Mean Absorbance of Standard) X concentration of **standard** X
 DF = mg/dl, DF = 100

-To compare with normal range, convert from **mg/dl** to **g/24h** :

-Find the Creatinine Clearance, if you know that:

The volume of the urine in 24h =100 ml and A=1.6 m²

3- Creatinine Clearance:

=U.V/ P

U is Urine creatinine, **V** is Volume of the urine in 24h, **P** is Serum creatinine.

= [Urinary creatinine (**mg/dl**) / Plasma creatinine (**mg/dl**)] X Urine volume (**ml/min**) = **Y**

So:

Y -----> 1.6 m² (person surface area)

? -----> 1.73 m²

-Corrected for surface area= **ml/min/1.73 m²**

-----OR-----

➔ Creatinine Clearance: = (U X V X 1.73) / (P X 1440 X A)
