Date ………….   Name ………………………………………………………………………..   Group …………….

Lab report for the practical lesson on biochemistry

Topic: **Examination of liver and pancreas**

Task 1: Estimation of aspartate aminotransferase (AST) in serum
Principle:
(Use structural formulas and include also the indication reaction)

Results and calculations:

Time: ΔA_{340}
0   A_0 …………
1 minute A_1 ………… $A_0 - A_1 \rightarrow \Delta A_1$ …………
2 minutes A_2 ………… $A_1 - A_2 \rightarrow \Delta A_2$ …………
3 minutes A_3 ………… $A_2 - A_3 \rightarrow \Delta A_3$ …………

$$\Delta A_{340} = \frac{\Delta A_1 + \Delta A_2 + \Delta A_3}{3} = \ldots\ldots\ldots\ldots..$$

S-AST (μkat/l) $= \Delta A_{340}$/min. $\times$ 36.2 $=$ …………………………..

Conclusion:
Compare the catalytic concentration of AST in your sample with reference values.

Task 2: Estimation of alanine aminotransferase (ALT) in serum

Principle:

(Use structural formulas and include also the indication reaction)

Results and calculations:

Time: ΔA_{340}

0   A_0 …………

1 minute A_1 ………… $A_0 - A_1 \rightarrow \Delta A_1$ …………

2 minutes A_2 ………… $A_1 - A_2 \rightarrow \Delta A_2$ …………

3 minutes A_3 ………… $A_2 - A_3 \rightarrow \Delta A_3$ …………

4 minutes A_4 ………… $A_3 - A_4 \rightarrow \Delta A_4$ …………

5 minutes A_5 ………… $A_4 - A_5 \rightarrow \Delta A_5$ …………

$$\Delta A_{340} \; = \; \frac{\Delta A_1 \; + \; \Delta A_2 \; + \; \Delta A_3 \; + \Delta A_4 \; + \; \Delta A_5}{5} \qquad = ……………$$

S-ALT (μkat/l) $= \; \Delta A_{340}$/min. $\times \; 29.5 \; = \;$ ……………………………..

Conclusion:

Compare the catalytic concentration of ALT in your sample with reference values.

Task 3: Estimation of γ-glutamyl transferase (GGT) in serum

Principle:
(Use structural formulas)

Results and calculations:

Time: ΔA_{405}

0	A_0 …………	
1 minute	A_1 …………	$A_1 - A_0 \rightarrow \Delta A_1$ …………
2 minutes	A_2 …………	$A_2 - A_1 \rightarrow \Delta A_2$ …………
3 minutes	A_3 …………	$A_3 - A_2 \rightarrow \Delta A_3$ …………

$$\Delta A_{405}/\text{min.} = \frac{\Delta A_1 + \Delta A_2 + \Delta A_3}{3} = \text{…………..}$$

$GGT\ (\mu kat/l) = \Delta A_{405}/\text{min.} \times 18.52 = $ ……………………….

Conclusion:
Compare the catalytic concentration of GGT in your sample with reference values.

Task 4: Estimation of serum amylase (AMS)

Principle:

Results and calculations:

Time: ΔA_{405}

0   A_0 …………

1 minute A_1 ………… $A_1 - A_0 \;\rightarrow\; \Delta A_1$ …………

2 minutes A_2 ………… $A_2 - A_1 \;\rightarrow\; \Delta A_2$ …………

3 minutes A_3 ………… $A_3 - A_2 \;\rightarrow\; \Delta A_3$ …………

$$\Delta A_{405} \;=\; \frac{\Delta A_1 \;+\; \Delta A_2 \;+\; \Delta A_3}{3} \;=\; \ldots\ldots\ldots\ldots$$

S-AMS (μkat/l) $\;=\; \Delta A_{405}/\text{min.} \;\times\; 54.9 \;=\;$ …………………………

Conclusion:
Compare the catalytic concentration of AMS in your sample with reference values.