

# BIO TEAM 429

إعداد:

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تم إعداد وتنسيق المذكره على أساس تبسيط المعلومات وترتيبها بوضع الجداول والرسوم التخطيطيه على قدر المستطاع ووضعتها على هيئة أسئلة مع الأجوبه من أجل سهولة المذاكره والإستفاده القصوى

مع ذلك.... هذا لا يمنع من الرجوع إلى الكتاب كمصدر أساسي للمذاكره

مع تمنياتنا للجميع بالتوفيق والنجاح

ولا نرجوا من عملنا هذا إلا الدعاء لنا بالتوفيق

## 1- Comparison of catabolic and anabolic pathways

<i>Catabolic</i>	<i>anabolic</i>
complex To Simple molecules	simple To Complex molecules
Exergonic	Endergonic
Involves oxidations	Involve chemical reductions
Requires NAD <sup>+</sup>	Requires NADPH
Is a convergent process	Is a divergent process

## 2- Transport of glucose into cells

<i>Na<sup>+</sup>-independent</i>	<i>Na<sup>+</sup>-monosaccharide cotransporter system-</i>
Mediated by GLUT 1-14	mediated by a sodium dependent-glucose transporter - SGLT
high concentration to a low (facilitated diffusion)	low concentration to a high (against the concentration gradient)
No energy	Need energy

**\*\* GLUT 1-14 :**

Transport glucose  
from blood into cell

Transport glucose  
from blood into cell + from cell to blood

GLUT -1 ( RBC + BRAIN )  
GLUT-3 ( NEURON )  
GLUT-4 ( ADIPOSE TISSUE + SKELETAL MUSCLE )

GLUT-2  
(LIVER + KIDNEY)

### 3- Glucose Metabolism

Glycolysis	TAC cycle	Glycogenesis	Glycogenolysis	Gluconeogenesis	HMP OR PPP
Breakdown of glucose	Formation of glucose	Formation of glycogen	Breakdown of glycogen	Formation of glycogen + glucose from Non carbohydrate e.g. :glycerol	Formation of NDAPH synthesis of ribose
Cytosol	Mitochondria	Cytosol	Cytosol	Cytosol + Mitochondria	Cytosol
function aerobically or anaerobically	final pathway of oxidation	energy supplied by ATP and UTP	glycogen glucose 1-phosphate	Work in prolonged fasting	No ATP is consumed or produced

Comparison between aerobic and anaerobic :

aerobic	anaerobic
Need O <sub>2</sub> to oxidize NADH	No O <sub>2</sub> so NAD <sup>+</sup>
Happening in mitochondrial tissue	Non mitochondrial tissue (RBC+ exercising muscles)
Final product is pyruvate enter to TAC	Final product is lactate enter to Gluconeogenesis

Note : (from boy's notes)

- A lot of glycogen : \*glucagon=active insulin=inactive  
glycogenolysis=active glycogenesis=inactive
- less of glycogen : glucagon=inactive insulin=active  
glycogenolysis=inactive glycogenesis=active *glucagon is a hormone*

### 4- Other than glucose metabolism :

Fructose Metabolism :

- Not insulin dependent
- Requires hexokinase and aldolase B enzymes

Galactose Metabolism :

- not insulin-dependent
- an important component of cell structural carbohydrates

Mannose Metabolism:

- an important component of glycoprotein
- Mannose is the C-2 epimer of glucose

## 5- Questions :

1- $\text{Na}^+$ -monosaccharide cotransporter system is mediated by :

- A- SGLT
- B- Insulin
- C- GLUT family
- D- Na

correct answer = A

2- $\text{Na}^+$ -independent transport glucose :

- A- From low to high concentration
- B- From high to low concentration
- C- Both A & B
- D- When movement of glucose is coupled to the movement of sodium

correct answer = B

3- which one of the following glucose transporters transports glucose in and out of the cells :

- A- GLUT-1
- B- GLUT-2
- C- GLUT-3
- D- GLUT-4

correct answer = B

4-which one of the processes synthesis glucose from non-carbohydrate substrates :

- A- TCA
- B- Glycogenesis
- C- Glycogenolysis
- D- Gluconeogenesis

correct answer = D

5- the pentose phosphate pathway form :

- A-  $\text{NAD}^+$
- B- NADH
- C- NADPH
- D- GLUT-2

correct answer = C

6- the final product of aerobically glycolysis is :

- A- Pyruvate
- B- Lactate
- C- Glucose
- D- Glycogen

correct answer = A

