



BIOCHEMISTRY

SURVIVAL BUNDLE

50 High-Yield Flashcards for 1st Year MBBS



Pathways Simplified



Exam Revision



Memory
Tricks



Viva Favorites

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How to Use This Deck

Welcome to the Biochemistry Survival Bundle.
This deck contains 50 high-yield flashcards designed for 1st Year MBBS students.



How to use:



- ✓ Read the question first
- ✓ Try to answer before checking the solution
- ✓ Revise 10 cards daily
- ✓ Mark difficult cards for review
- ✓ Repeat weekly for long-term retention
- ✓ Repeat weekly for long-term retention



GLYCOLYSIS

What is the rate-limiting enzyme of Glycolysis?

PFK-1

 **Mnemonic: “PFK Pushes Fast”**

 **Controls committed step of
Glycolysis**

 **High-Yield Viva Question**



GLYCOLYSIS

How many ATP are used and produced in Glycolysis?

Used = 2 ATP

Produced = 4 ATP

 **Net Gain = 2 ATP**

 **“Invest 2 → Earn 4”**



GLYCOLYSIS

What are the irreversible steps of Glycolysis?

Hexokinase

PFK-1

Pyruvate Kinase



“HPK”



Frequently Asked



GLYCOLYSIS

What happens to pyruvate in anaerobic conditions?

Converted to Lactate

Enzyme: Lactate Dehydrogenase





Helps regenerate NAD⁺



GLYCOLYSIS

**Which organ depends
mainly
on Glycolysis?**

RBCs

-  RBCs have NO mitochondria
-  “No mito = Glycolysis only”



TCA CYCLE

What is the rate-limiting enzyme of TCA cycle?

Isocitrate Dehydrogenase

 **Converts Isocitrate →
α-Ketoglutarate**

 **Viva Favorite**



TCA CYCLE

**Where does TCA cycle
occur?**

Mitochondrial Matrix



Except

Succinate Dehydrogenase



TCA CYCLE

**Why is TCA called
amphibolic?**

Both catabolic & anabolic



Produces energy

+

biosynthetic intermediates



TCA CYCLE

**How much ATP is produced
from one TCA cycle?**

10 ATP

Includes:

NADH

FADH₂

GTP



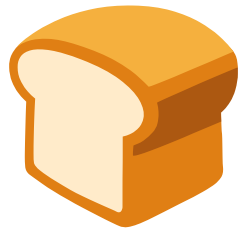
TCA CYCLE

**Which vitamin cofactors
are important in
TCA cycle?**

B1, B2, B3, B5



“The B vitamins power metabolism”



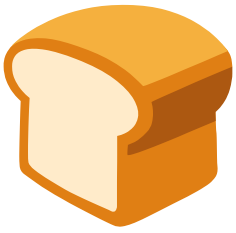
GLYCOGEN

**Rate-limiting enzyme of
Glycogenesis?**

Glycogen Synthase



Forms glycogen



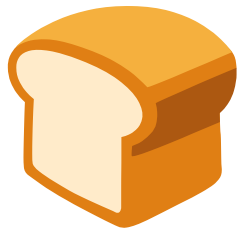
GLYCOGEN

**Rate-limiting enzyme of
Glycogenolysis?**

Glycogen Phosphorylase



Breaks glycogen



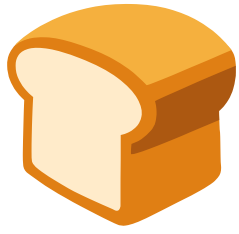
GLYCOGEN

**Which hormone stimulates
glycogen breakdown?**

Glucagon



Raises blood glucose



GLYCOGEN

Defect in

Von Gierke disease?

Glucose-6- Phosphatase deficiency

 **Severe
fasting hypoglycemia**



HMP SHUNT

Main product of HMP shunt?

NADPH

 **Important for
antioxidant defense**



HMP SHUNT

**Why is G6PD deficiency
important?**

Causes hemolytic anemia



RBC oxidative damage



GLUCONEOGENESIS

**Main organ for
gluconeogenesis?**

Liver



Kidney also contributes



GLUCONEOGENESIS

Rate-limiting enzyme?

Fructose-1,6- biphosphatase



GLUCONEOGENESIS

**Main substrates for
gluconeogenesis?**

Lactate
Glycerol
Amino acids



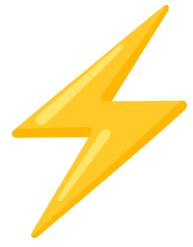
ETC

**Which complex produces
maximum ATP?**

Complex I



**Major NADH entry
point**



ETC

Where does oxidative phosphorylation occur?

Inner mitochondrial membrane



ATP generated here



ETC

What is the function of ATP synthase?

Produces ATP



Uses proton gradient



“Protons power ATP”



ETC

**Why is cyanide
dangerous?**

Blocks Complex IV



Stops ATP production



Medical Emergency



UREA CYCLE

Rate-limiting enzyme?

CPS-1

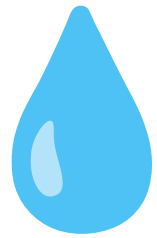
Carbamoyl Phosphate Synthetase-I



UREA CYCLE

**Where does
urea cycle occur?**

Mitochondria + Cytosol



UREA CYCLE

**Symptoms of
hyperammonemia?**

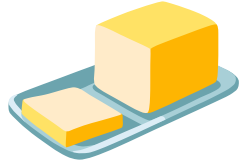
Confusion

Vomiting

Cerebral edema



High-Yield Clinical Question

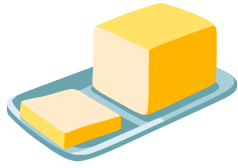


LIPID

METABOLISM

**Rate-limiting enzyme
of fatty acid synthesis?**

Acetyl-CoA Carboxylase



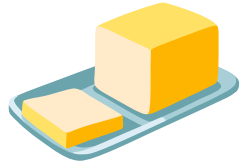
LIPID

METABOLISM

**Rate-limiting enzyme
of beta oxidation?**

Carnitine Shuttle

 **CPT-1 important**

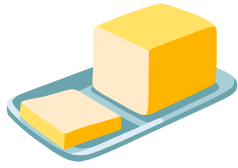


LIPID

METABOLISM

**Where are ketone bodies
produced?**

Liver mitochondria



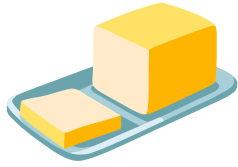
LIPID

METABOLISM

Why does ketoacidosis occur in diabetes?

Excess ketone body formation

 **Due to insulin deficiency**



LIPID METABOLISM

**Good cholesterol
vs
bad cholesterol?**

HDL = Good

LDL = Bad

 **“H = Healthy”**



AMINO ACIDS

**Mnemonic for
essential amino acids?**

PVT TIM HALL



Must Memorize



AMINO ACIDS

Defect in PKU?

Phenylalanine Hydroxylase deficiency



AMINO ACIDS

**Defect in
Maple Syrup Urine Disease?**

Branched-chain α - ketoacid dehydrogenase deficiency



AMINO ACIDS

**Which vitamin is required for
transamination?**

Vitamin B6


PLP = Pyridoxal phosphate



VITAMINS

Vitamin B1 deficiency disease?

Beriberi

 **Also causes
Wernicke syndrome**



VITAMINS

Vitamin C deficiency?

Scurvy



Bleeding gums



VITAMINS

**Main function of
Vitamin D?**

Calcium absorption



Bone mineralization



VITAMINS

**Night blindness is caused by
deficiency of?**

Vitamin A



VITAMINS

Function of Vitamin K?

Blood clotting



Activates clotting factors



ENZYMES

**Example of
competitive inhibition?**

Statins



Compete with substrate



ENZYMES

**Difference between
competitive
&
noncompetitive inhibition?**

Competitive:

K_m changes

Noncompetitive:

V_{max} changes



MOLECULAR BIOLOGY

**Main enzyme for
DNA replication?**

DNA Polymerase



MOLECULAR BIOLOGY

Difference between DNA & RNA?

DNA:

Double-stranded

RNA:

Single-stranded



MOLECULAR BIOLOGY

What is transcription?

DNA → RNA



MOLECULAR BIOLOGY

What is translation?

RNA → Protein



CLINICAL BIOCHEMISTRY

**Most important
cardiac marker?**

Troponin



MI marker



CLINICAL BIOCHEMISTRY

**Normal
fasting blood glucose?**

70–100 mg/dL



CLINICAL BIOCHEMISTRY

Why is HbA1c important?

Indicates long-term glucose control




Last 3 months



CLINICAL BIOCHEMISTRY

**Biochemical marker of
liver damage?**

ALT & AST

 **Elevated in
hepatocellular injury**

Thank You

Thank you for purchasing the Biochemistry Survival Bundle.

Keep revising. Consistency beats cramming.



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