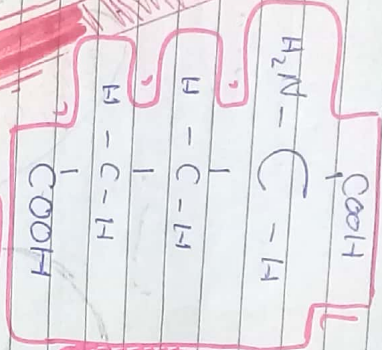


Glutamic acid.

Formation:

- 1) From αKG, by Deamination.
- 2) From glutamine by glutaminase enz.
- 3) From Destruction of proline lysine histidine.



For Vit K
independent factor
Glutamic → 8 carbons
glutamate

Importance

① GABA synthesis

gamma amino butyric acid.

glutamic acid decarboxylase

glutamic acid

PLP
vit B6

glutamic acid → GABA

Synthesis of
glutamate
from
proline
lysine
histidine

Synthesis

folic acid.

②

GSH

glutamic & serine
+ glycine
glutamic peptide bond
between glutamic
+ cysteine.

glycine + glutamic acid + cysteine
ATP → ADP + H₂O
GSH

Inactivation of
Insulin.

Function

Ferric → Ferrous

Remove H₂O₂
which keep
integrity of RBCs

2GSH + H₂O₂ → 2H₂O + GSSG

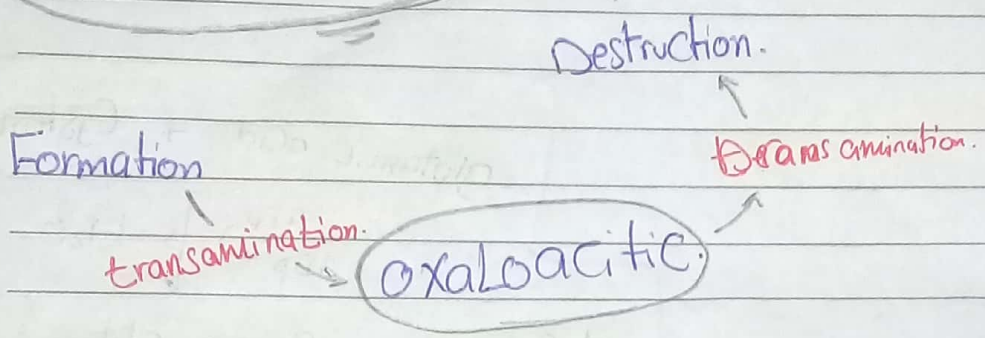
NADPH

G6PD →

NADP

XGT Gels
for AA
absorption.

Aspartic acid



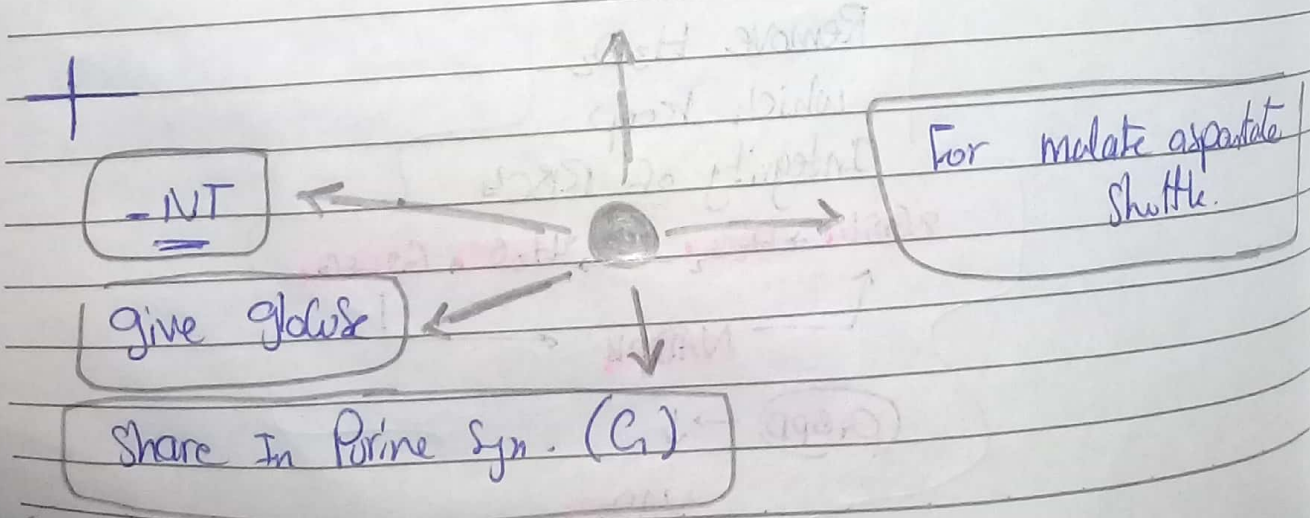
Non Essential

Gluconeogenic

1 Main Function :-

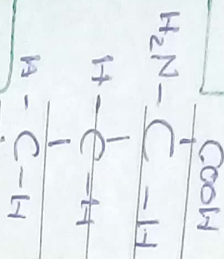
Asparaginase

Anti Cancer Drug
For Leukemia
Convert asparagine → aspartic
So leukemia can't find asparagine
which is essential for all division.



METHIONINE

Essential
Glucogenic



can be donated

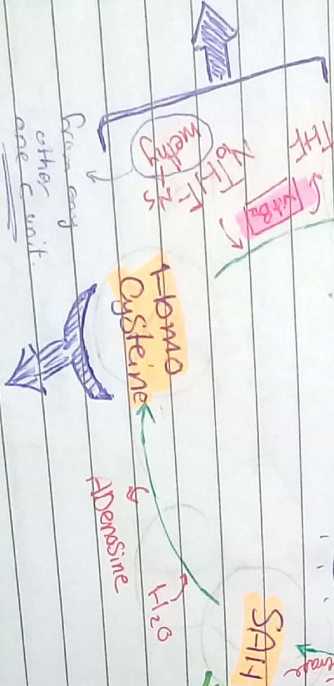
- ① makes Carnitine
- ② Give S for Cysteine Synth.
- ③ Skeleton for α-keto butyrate
- ④ METHYL Donor

Methionine

SAM



SAH



N.B
Methyl attached to
THF
Need B12 to
attach

N.B

If Homocysteine ↑
↓
Atherosclerosis

In case B12 DEF
methyl still attach
No methionine
(Folate trap)
Some symptoms as if

Benefits of methyl cycle

- ① Prevent Methionine ↓ which is essential
- ② Prevent Homocysteine ↑
- ③ Prevent Atherosclerosis

Transmethylation reactions

① NORPEP

② Ethanolamine

③ Serotonin

④ GABA

⑤ Degradation of Vit A by C-methyltransferase

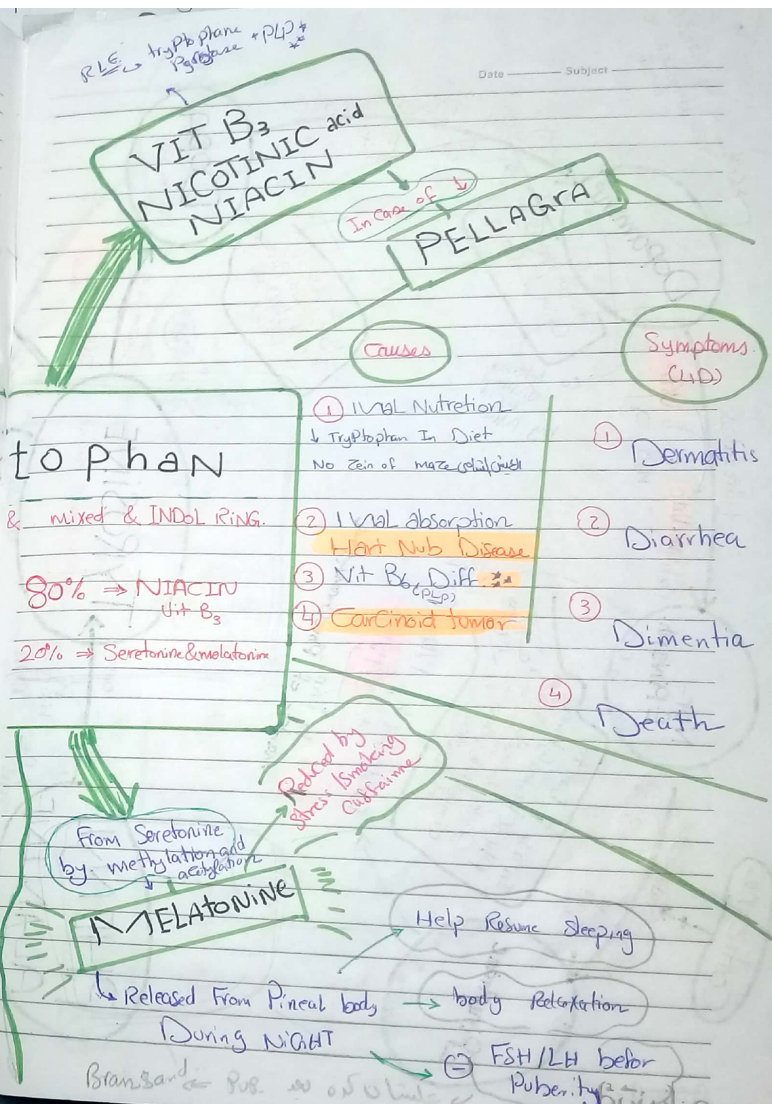
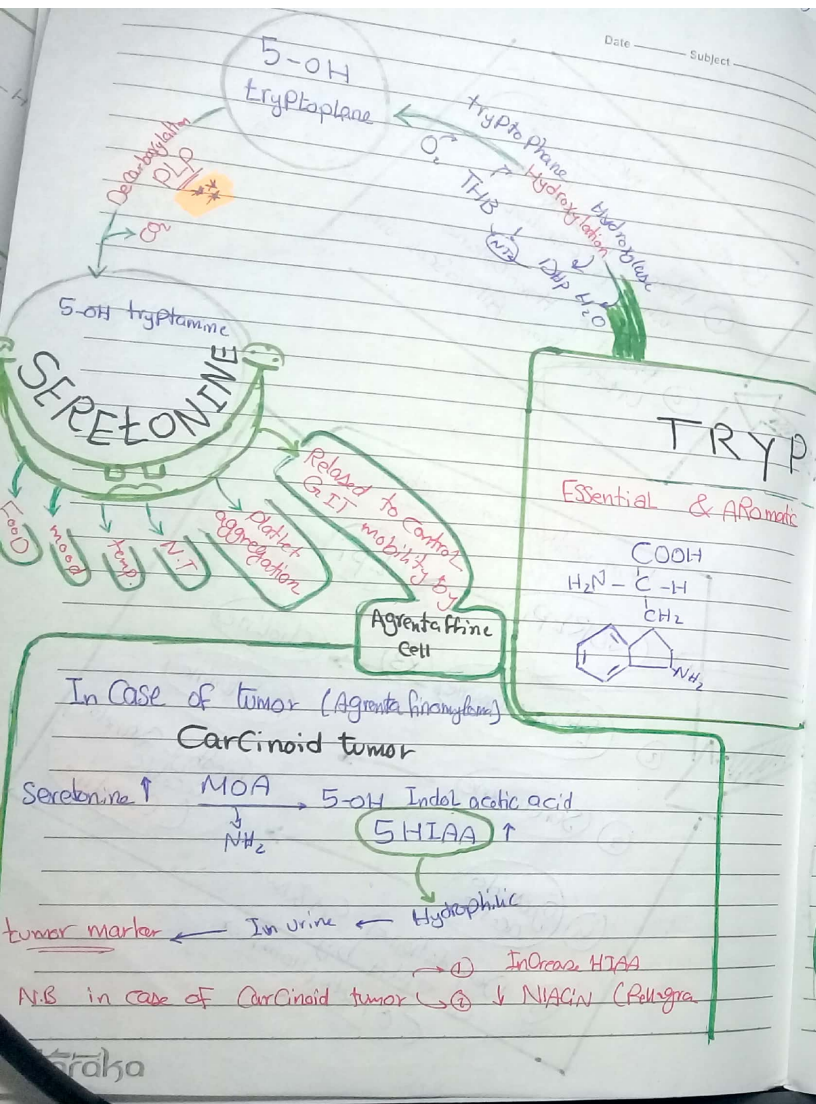
⑥ Epi

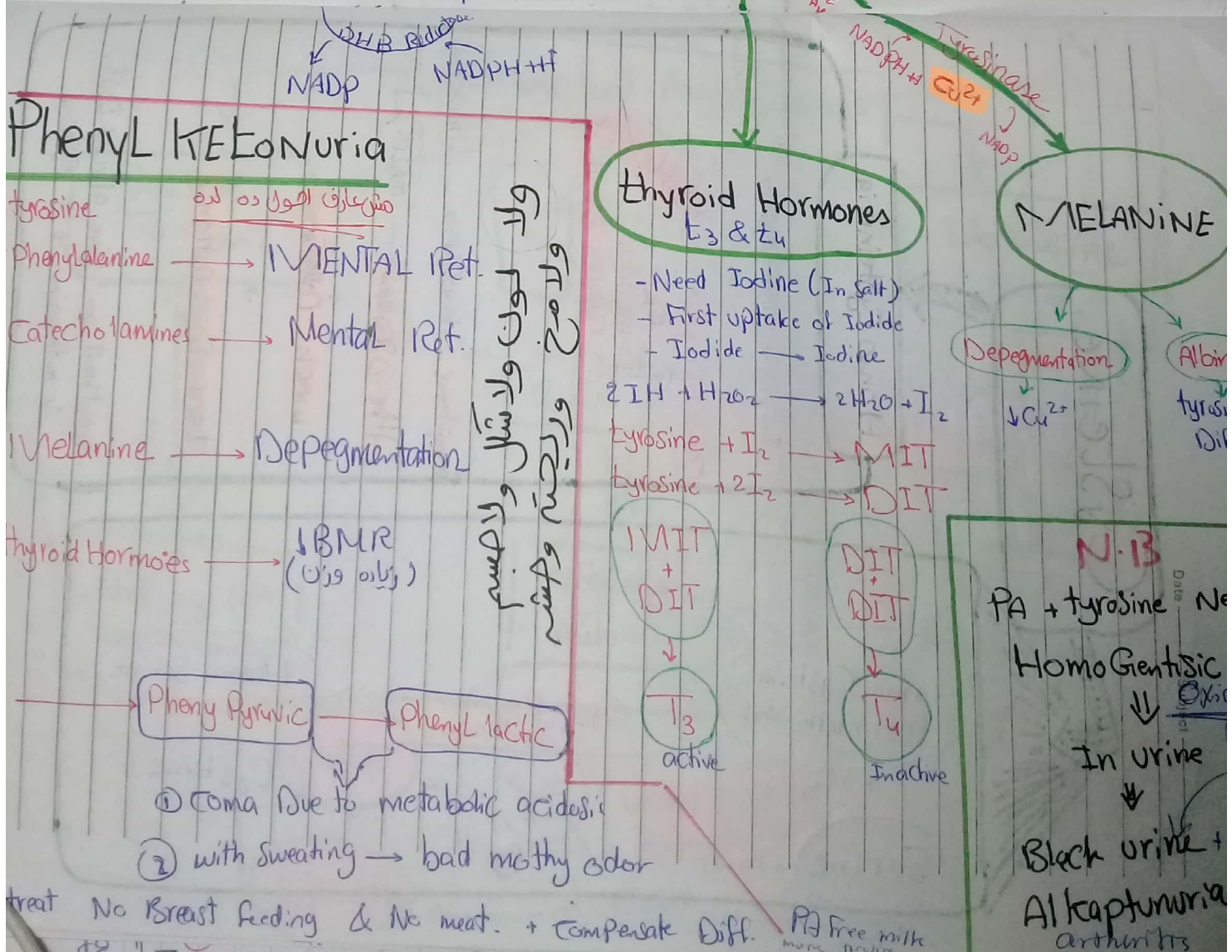
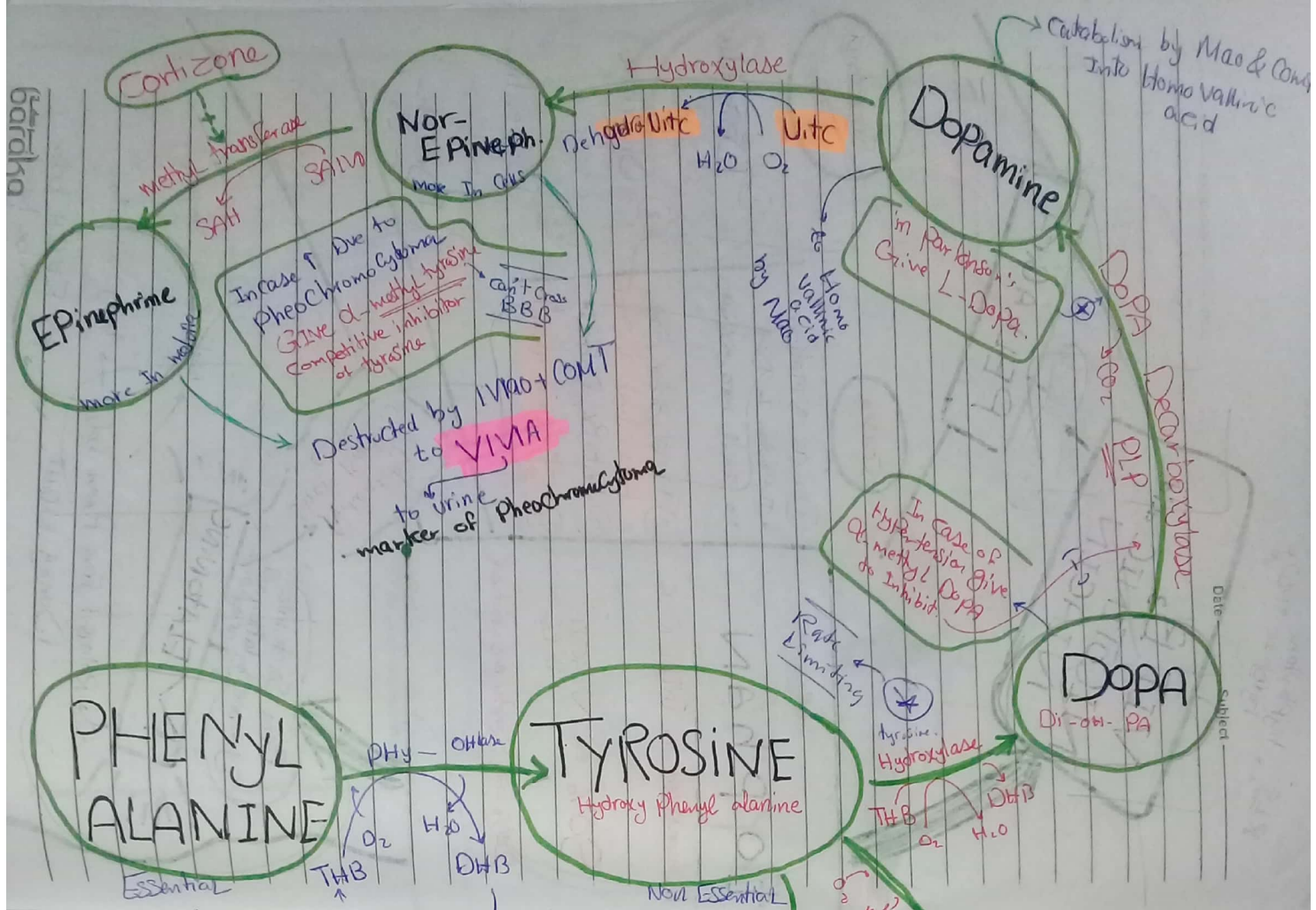
⑦ Choline

⑧ Melanin

⑨ Methylation of DNA

⑩





Cysteine

Homo Cysteinuria

Increase Homocysteine \leftarrow from methionine
In Cysteine making

- Causes**
- ① PLP
 - ② B₁₂
 - ③ methionine
 - ④ Cystathionine Synthase
- Deficiency*

Symptoms Homocysteine \rightarrow Thickened

Atherosclerosis \leftarrow oxidation

+
weak Collagen

+
Lens Dislocation

treatment \Rightarrow give affected Diff.
 \downarrow methionine + \uparrow Cysteine

Serine

\rightarrow for SC

Homo Cysteine
(From methionine)

\rightarrow for SH group

PLP

Cystathionine Synthase

Cysteine

Homo Serine

Branched Amino Acids

Valine
Gluconeogenic

Leucine
ketogenic

Isoleucine
mixed

Catabolism in muscle by
 α -keto acid Dehydrogenase Complex

Propionyl-CoA

Acetyl-CoA
Acetoacetic

Propionyl-CoA
acetyl-CoA

INR

Death

urine taste as
burned sugar

cause

maple Syrb
Disease.

can be
caused
by
Thiamine Def.

ARGININE

No Synthase

FAD
FMN
NADP
Heme
TH13

Nitric oxide

Neurotransmitter
For Relaxation & VD

made In

Neurons → n-NOS → Need Ca^{2+}

Endothelium → e-NOS

macrophages → i-NOS
 Ca^{2+} Independent

USED as Drug NITRO Glycerin

For myocardial Infarction
or In Pulmonary Hypertension

VIT B₁ . THIAMINE

Source

whole or refined
Grains
also yeast

Requirement

1- 1.2 m male
1.1 m female

Difference

↓ in Diet as In Polished Rice
Refined wheat
or Chronic alcoholism

Diagnosis by blood sample
and record transketolase activity
before and after adding
thiamine.

Chronic

Beri - Beri

Adult type

Dry
mild
Doesn't affect
Heart
No oedema

Infantile type

Wet
Severe Diff.
Neuropathy
Convulsion
acidosis
Can Cause
Death
Affect Heart
Oedema

Acute

Wernicke Korsakoff

Acute Duet Chronic Alcoholism
Confusion Can lead to IVIR
Ataxia Nystagmus
treat by IV. Thiamine

Symp

Importance

Thiamine P₄P Synthase
ATP → Amp
active in Brain & Liver

For oxidative Dephosphorylation
↓ ↓
PDH H₂AMP αKG Dehydro