

Depression,
serotonin
and dark chocolate



Major depression (Unipolar disorder) Quizz 1

1. What are emotional/mood symptoms of depression?
2. Who's theory of depression is based on the “Cognitive triad”?
3. What is the most common course of depression?
 - a) recovery without recurrence
 - b) recovery with recurrence
 - c) chronic depression
4. What attributional style does a depressed individual use for bad events?
 - a) internal – unstable – specific
 - b) external – stable – global
 - c) internal – stable - global

Major symptoms:

- Low mood
- Inability to experience pleasure and drive
- Cognitive impairment
(memory, concentration etc)
- Low self-esteem, hopelessness
- Insomnia or hypersomnia
- In most severe cases, psychosis

To experience smth. –
переживать что-то

Drive (психол.) – энергия,
внутренний импульс

Impairment – ухудшение,
нарушение функции

Self-esteem – самооценка

Insomnia – бессонница

Severe case – тяжелый
случай

Major causes:

- Psychological (stressful life events, death, relationships break, financial losses, etc.)
- Biological (brain damage, toxic agents, genetic mutations, drug abuse)

Life events – жизненные события

Sedative drugs – успокоительные лекарства

Drug abuse – злоупотребление наркотиками (или мед. препаратами)

Biological mechanism

Monoamine theory – low level of three neurotransmitters:

- Serotonin
- Norepinephrine (noradrenaline)
- Dopamine

Most modern antidepressant drugs are targeting these three compounds (to increase).

Neurotransmitter – нейромедиатор, активное действующее вещество в синапсе

Chemical compound – химическое соединение

Fatigue – истощение, утомление

Anxiety – тревога, тревожность

Biological mechanism

Serotonin – energy, calmness, concentration

Lack of serotonin – fatigue, anxiety

Neurotransmitter – нейромедиатор, активное действующее вещество в синапсе

Chemical compound – химическое соединение

Fatigue – истощение, утомление

Anxiety – тревога, тревожность

Biological mechanism

Dopamine – happiness, pleasure, motivation

Lack of dopamine – anhedonia, apathy

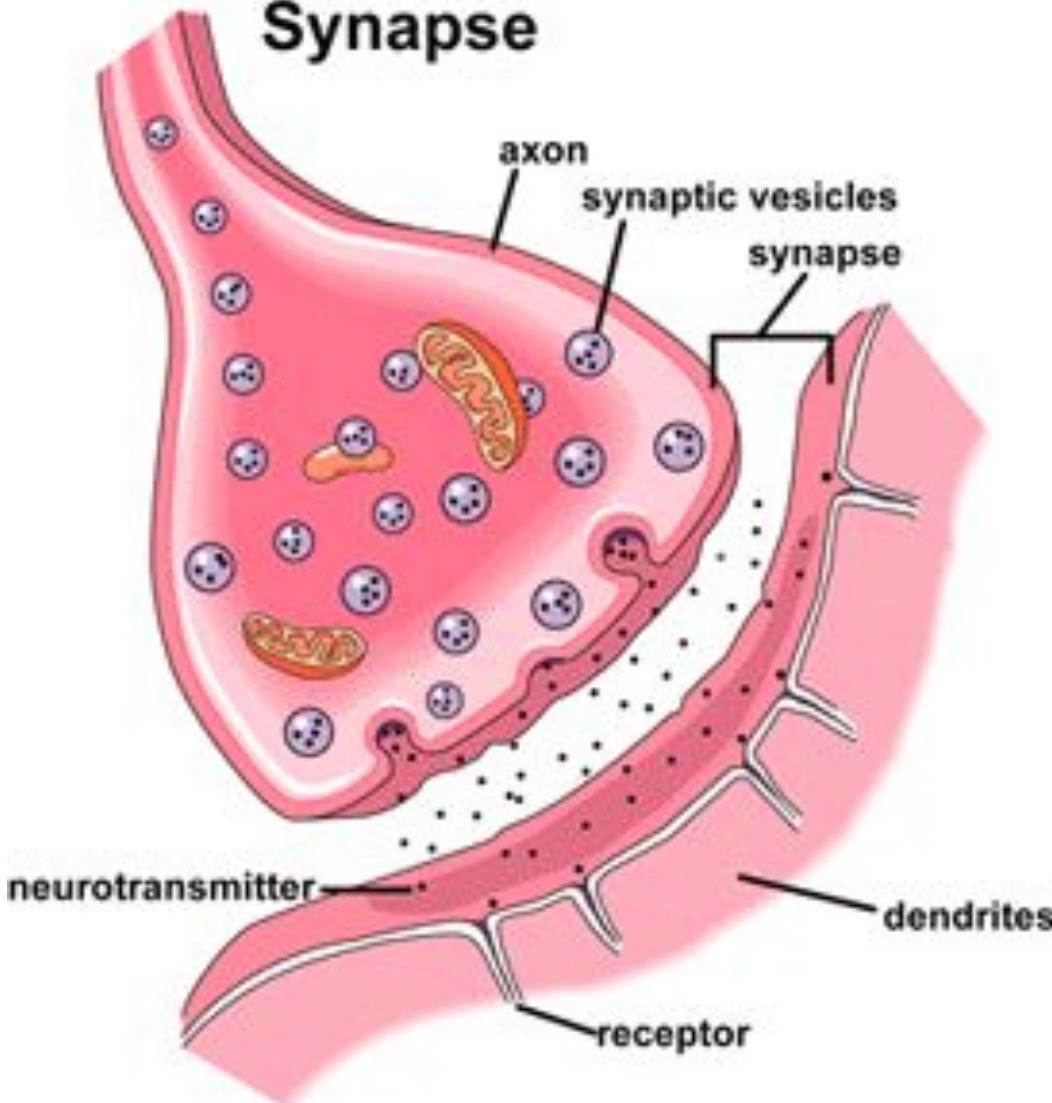
Neurotransmitter – нейромедиатор, активное действующее вещество в синапсе

Chemical compound – химическое соединение

Fatigue – истощение, утомление

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Synapse

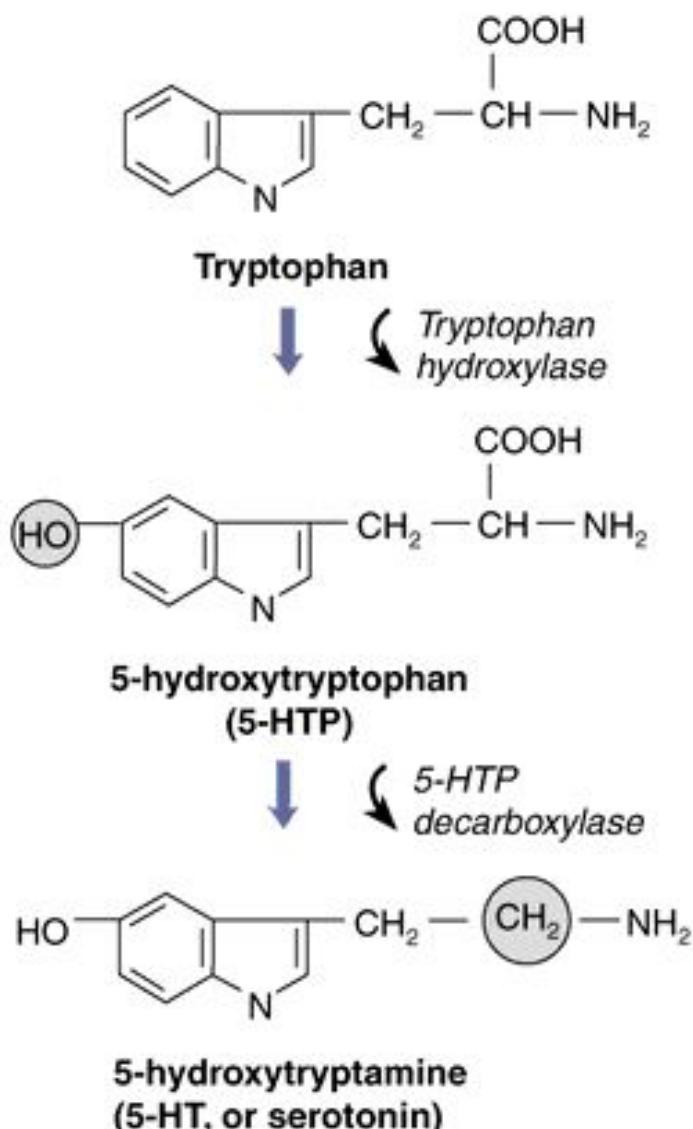


Neurotransmitter –
нейромедиатор, активное
действующее вещество в
синапсе

Cell – клетка

Neuron – нейрон

► Biosynthesis of Serotonin

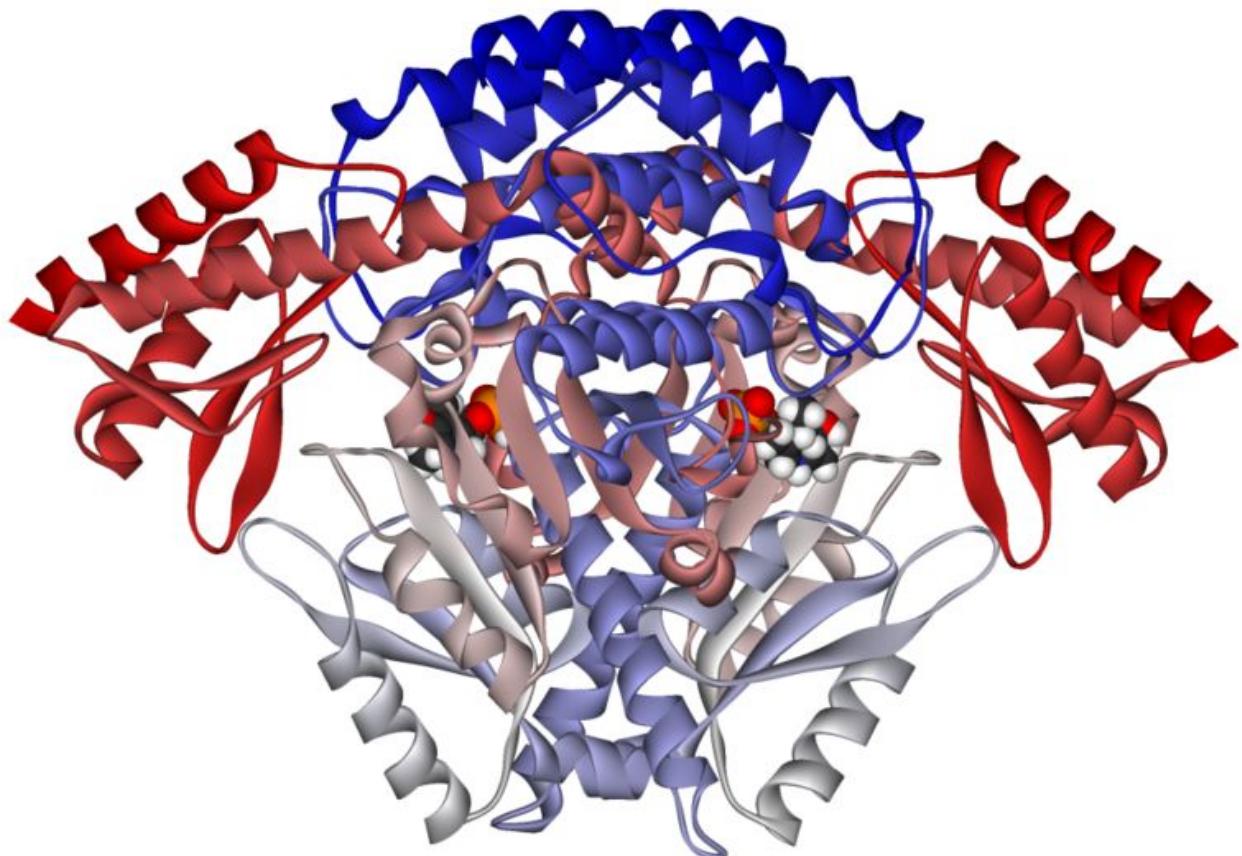


To synthesize –
синтезировать

Precursor –
предшественник

Amino acid –
аминокислота

Enzyme – энзим,
фермент



AADC (enzyme)

(Aromatic L-amino acid decarboxylase)

Converts both **5-HTP** to **serotonin** and **L-Dopa** to **dopamine**

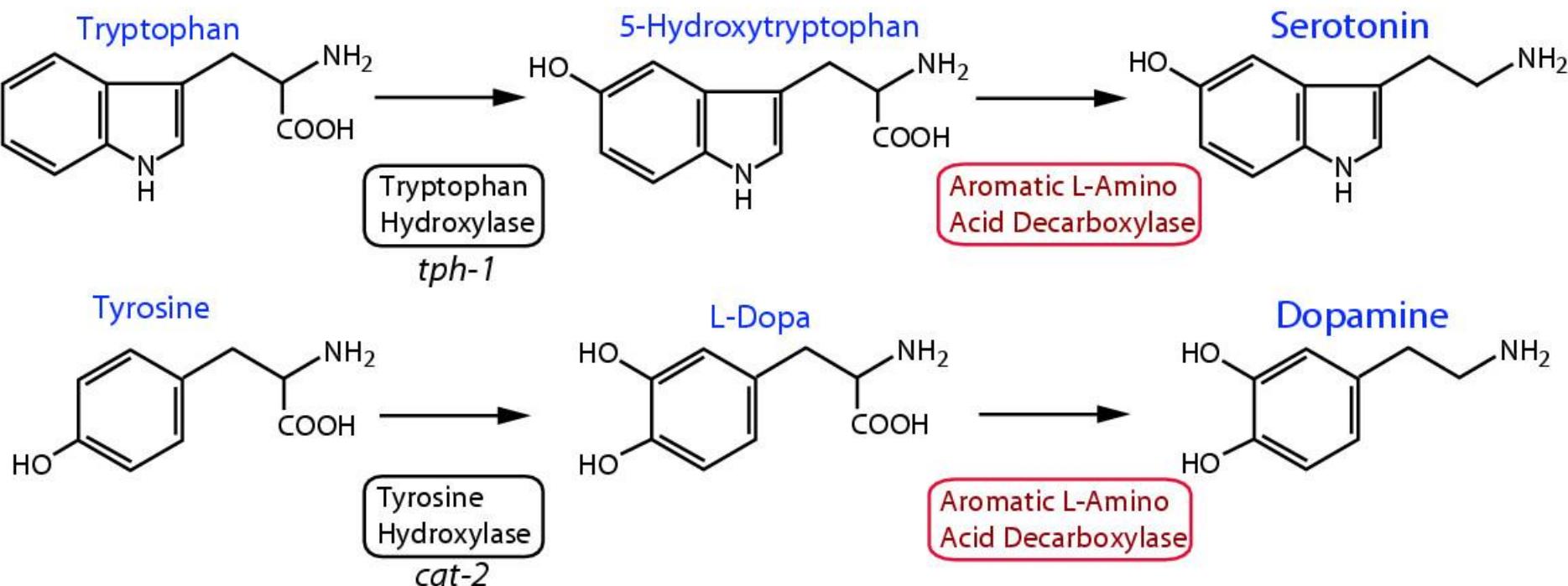
Precursor –
предшественник

Amino acid –
аминокислота

Enzyme – энзим,
Фермент

To convert –
превращать,
преобразовывать

Serotonin & Dopamine Biosynthesis

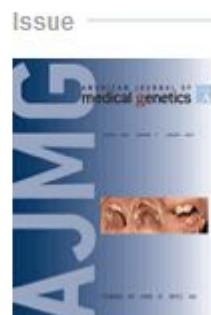


Association study between two variants in the DOPA decarboxylase gene in bipolar and unipolar affective disorder[†]

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Thomas G. Schulze^{2,3}, Christine
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Issue

Possible parent-of-origin effect of Dopa decarboxylase in susceptibility to bipolar affective disorder

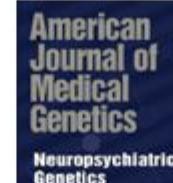
A.D. Børglum^{1,*}, G. Kirov⁸, N. Craddock⁹,
O. Mors², W. Muir⁵, V. Murray⁶, I. McKee⁷,
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Issue



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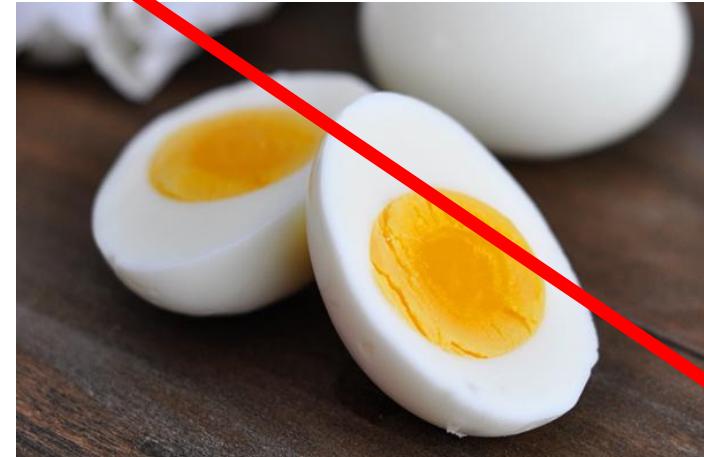
Tyrosine (to raise dopamine)



Tryptophan (to raise serotonin)



Tryptophan (to raise serotonin)



Diet

Diet rich in carbohydrates (sugars) increases level of **insulin**, and then increase **serotonin production**.



Carbohydrates –
углеводы

Diabetes –
сахарный диабет



Carbohydrates –
углеводы

Diabetes –
сахарный диабет

Diet

Rich in carbohydrates (sugars) increases level of **insulin**, and then increase **serotonin production**.

BUT! Constant high level of insulin may cause diabetes (II type)

Carbohydrates –

углеводы

Diabetes –

сахарный диабет



Low sugar. Not a good source of tryptophan.

Then why does dark chocolate help?





Anandamide – endogenous cannabinoid

Phenethylamine – «chocolate amphetamine», stimulant that promote feelings of attraction, excitement by stimulating the brain's pleasure centres

Flavonoids - anti-inflammatory, anti-allergic, good for blood flow

Endogenous –
эндогенный,
внутренний

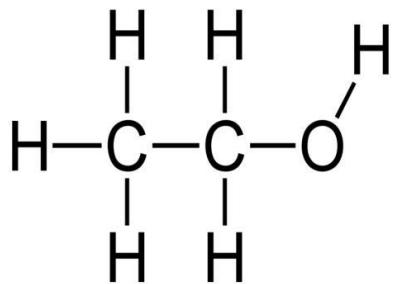
Excitement –
возбуждение

Pleasure centres –
центры удовольствия

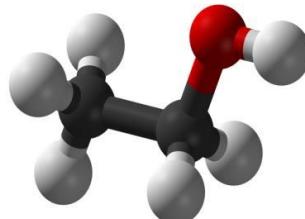
Inflammatory –
воспалительный







Ethanol



Ethanol –
этиловый спирт,
алкоголь



Anandamide – endogenous cannabinoid

Phenethylamine – «chocolate amphetamine», stimulant that promote feelings of attraction, excitement by stimulating the brain's pleasure centres

Flavonoids - anti-inflammatory, anti-allergic, blood flow

Endogenous –
эндогенный,
внутренний

Excitement –
возбуждение

Pleasure centres –
центры удовольствия

Inflammatory –
воспалительный

Remember!

No matter how complicated the psychological phenomenon is, there is always physiological mechanism, underlying it.



Complicated –
сложный,
комплексный

Underlying –
лежащий в основе

