

Eating for Brain Health



With
Dr. Ritamarie Loscalzo

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How The Nervous System Works

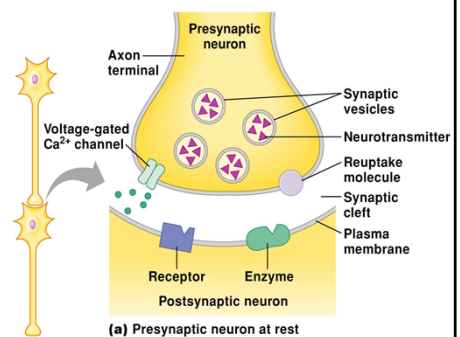


- Brain parts
- Neurons
- Synapses
- Neurotransmitters
- Myelin sheaths

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SYNAPSES

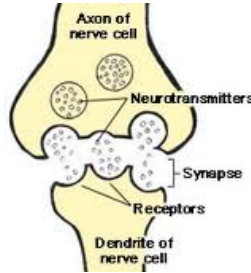
- Can be excitatory or inhibitory



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Neurotransmitters

- Chemical messengers of the brain
- Location and action varies
- Excitatory or inhibitory



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The Major Neurotransmitters

Inhibitory

- Serotonin
- Dopamine
- GABA
- Glycine

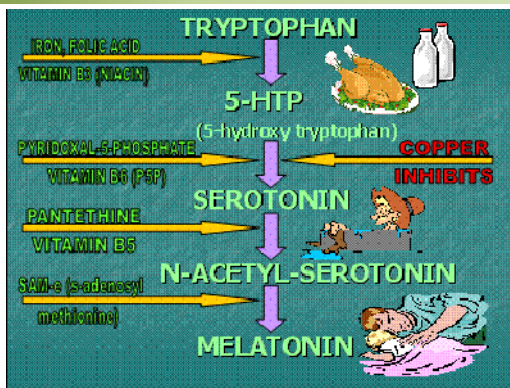
Excitatory

- Glutamine
- Acetylcholine
- Norepinephrine



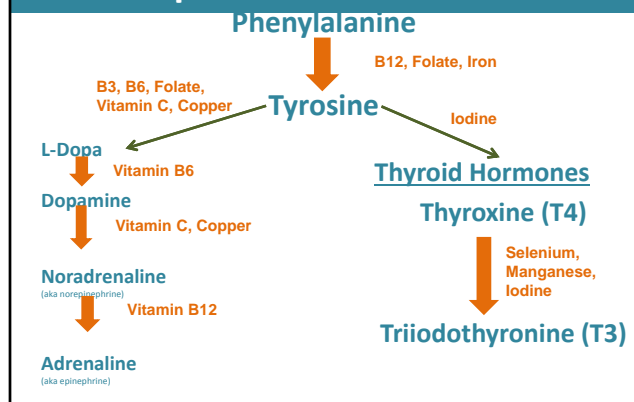
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Serotonin Metabolism



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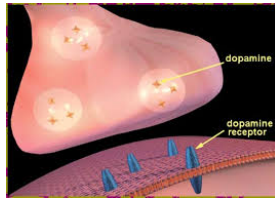
Dopamine Metabolism



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Dopamine Deficiency Symptoms

- Apathetic depression
- Lack of energy
- Lack of drive
- Easily bored
- Lack of focus
- Inability to concentrate
- ADD

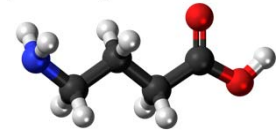


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GABA

(*gamma*-Aminobutyric acid)

- **Inhibitory** CNS neurotransmitter
- **Functions outside nervous system:** intestine, stomach, pancreas, Fallopian tube, uterus, ovary, testis, kidney, urinary bladder, lung, and liver
- Regulates muscle tone
- Calms nervous system
- Affects attention and memory



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Lysine
↓
Aspartic Acid
↓
Glutamic Acid
↓
Glutamine

Taurine → GABA

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What Can Go Wrong

- Depression
- Anxiety
- Lack of focus
- Memory problems
- Bipolar
- Schizophrenia



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8 Essential Amino Acids: How They Affect Energy and Mood

- **Tryptophan:** Serotonin and Melatonin
- **Methionine:** Glutathione
- **Phenylalanine:** Tyrosine, Dopamine, Norepinephrine
- **Threonine:** Glycine
- **Valine:** Energy
- **Leucine:** Energy
- **Isoleucine:** Energy
- **Lysine:** Glutamine



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Neurotransmitter And Precursors Amino Acids

- Phenylalanine → tyrosine
- Tyrosine → dopamine, norepinephrine, epinephrine, and thyroid hormone
- Tryptophan → serotonin and melatonin
- Glutamic acid → GABA
- GABA (gamma aminobutyric acid)
- Taurine → GABA



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Nutrient Deficiencies That Can Lead to Neurotransmitter Imbalances

- | | |
|----------|------------|
| ▪ B1 | ▪ C |
| ▪ B3 | ▪ D |
| ▪ Folate | ▪ E |
| ▪ B12 | ▪ Chromium |
| ▪ B6 | ▪ Iron |
| | ▪ Choline |



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Serotonin Deficiency

Substances That Provide Relief

- Sweets
- Starch
- Tobacco
- Chocolate
- Alcohol
- Marijuana
- Ecstasy
- Prozac
- Paxil
- Effexor
- Celexa



Possible Amino Acid Solutions

- 5-HTP
- Or
- L-Tryptophan

With

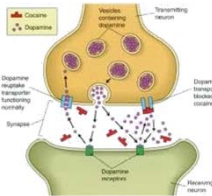
- Vitamin B6 as P-5-P
- L-Tyrosine

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Dopamine Deficiency

Substances That Provide Relief

- Sweets
- Starch
- Aspartame
- Chocolate
- Alcohol
- Marijuana
- Caffeine
- Cocaine
- Speed
- Tobacco
- Wellbutrin
- Ritalin
- Adderall



Possible Amino Acid Solutions

- Tyrosine

Or L-phenylalanine, especially if also symptoms of low endorphins: sensitive to pain, cry easily, cravings for comfort foods or drugs

- With Vitamin B6

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GABA Deficiency

Substances That Provide Relief

- Sweets
- Starch
- Alcohol
- Marijuana
- Tobacco
- Valium
- Neurotin
- Clonopin



Possible Amino Acid Solutions

- GABA
- Possibly with taurine and/or glycine

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Brain-Friendly Diet and Lifestyle

- Whole foods, antioxidant-rich diet high in greens, fruits, and vegetables
- Fat balance: Omega-3s daily (flax, hemp, chia seeds, walnuts, purslane, and algae) and avoiding heated and processed fats
- Avoidance of environmental toxins
- Sugar balance
- Be wary of medications
- Manage stress



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