



# Neurotransmitter Support

## Supplementation Considerations

### Neurobasic Profile

<b>High Serotonin</b> <ul style="list-style-type: none"><li>• L-theanine 100-500 mg bid</li><li>• Rhodiola (Rhodiola rosea) root extract (4% Rosavins, 1% Salidroside) 1,000-2,000 mg</li><li>• Co-factors (to support metabolism and conversion)<ol style="list-style-type: none"><li>1. Vitamin B2: 50 mg</li><li>2. Vitamin B3: 100 mg</li><li>3. Iron: 25-50 mg</li><li>4. SAmE: 100-500 mg</li></ol></li></ul>	<b>Low Serotonin</b> <ul style="list-style-type: none"><li>• Tryptophan 500-2,000 mg</li><li>• Rhodiola (Rhodiola rosea) root extract (4% Rosavins, 1% Salidroside) 100-300 mg</li><li>• 5 HTP 50-600 mg</li><li>• L-theanine 100-500 mg bid</li><li>• Co-factors<ol style="list-style-type: none"><li>1. Vitamin D: 1,000-10,000 IU</li><li>2. Iron: 25-50 mg</li><li>3. P5P: 10-50 mg</li><li>4. BH4<ol style="list-style-type: none"><li>a) Vitamin B3: 50 mg</li><li>b) Vitamin C: 1000-3000 mg</li><li>c) SAmE: 100-500 mg</li><li>d) Molybdenum: 250-500 mcg</li><li>e) Zinc: 15-30 mg</li></ol></li></ol></li></ul>
<b>High GABA</b> <ul style="list-style-type: none"><li>• L-theanine 100-500 mg bid</li></ul>	<b>Low GABA</b> <ul style="list-style-type: none"><li>• L-theanine 100-500 mg bid</li><li>• GABA 500-2,000 mg qd</li><li>• Phenibut 250-1,000 mg bid</li><li>• Taurine 500-1,500 mg</li><li>• Glutamine 1,000-3,000 mg</li><li>• Co-factors<ol style="list-style-type: none"><li>1. P5P: 10-50 mg</li></ol></li></ul>
<b>High Dopamine</b> <ul style="list-style-type: none"><li>• L-theanine 100-500 mg bid</li><li>• Rhodiola (Rhodiola rosea) root extract (4% Rosavins, 1% Salidroside) 1,000-2,000 mg</li><li>• Co-factors (to support MAO/COMT)<ol style="list-style-type: none"><li>1. Vitamin B2: 50 mg</li><li>2. Vitamin B3: 100 mg</li><li>3. Iron: 25-50 mg</li><li>4. SAmE: 100-500 mg</li></ol></li><li>• Co-factors (if norepi low or low range)<ol style="list-style-type: none"><li>1. Vitamin C: 1,000-3,000 mg</li><li>2. Copper: 0.5-1 mg</li><li>3. Vitamin B3: 50 mg</li></ol></li></ul>	<b>Low Dopamine</b> <ul style="list-style-type: none"><li>• N-acetyl L-tyrosine 250-1,500 mg</li><li>• Rhodiola (Rhodiola rosea) root extract (4% Rosavins, 1% Salidroside) 100-300 mg</li><li>• Mucuna pruriens 200-800 mg</li><li>• L-theanine 100-500 mg bid</li><li>• Co-factors<ol style="list-style-type: none"><li>1. Vitamin D: 1,000-10,000 IU</li><li>2. Iron: 25-50 mg</li><li>3. P5P: 10-50 mg</li><li>4. BH4<ol style="list-style-type: none"><li>a) Vitamin B3: 50 mg</li><li>b) Vitamin C: 1000-3000 mg</li><li>c) SAmE: 100-500 mg</li><li>d) Molybdenum: 250-500 mcg</li><li>e) Zinc: 15-30 mg</li></ol></li></ol></li></ul>
<b>High Norepinephrine</b> <ul style="list-style-type: none"><li>• L-theanine 100-500 mg bid</li><li>• Rhodiola (Rhodiola rosea) root extract (4% Rosavins, 1% Salidroside) 1,000-2,000 mg</li><li>• Co-factors (to support MAO/COMT)<ol style="list-style-type: none"><li>1. Vitamin B2: 50 mg</li><li>2. Vitamin B3: 100 mg</li><li>3. Iron: 25-50 mg</li><li>4. SAmE: 100-500 mg</li></ol></li><li>• Co-factors (if epi low or low range)<ol style="list-style-type: none"><li>1. SAmE: 100-500 mg</li><li>2. Arenal support</li></ol></li></ul>	<b>Low Norepinephrine</b> <ul style="list-style-type: none"><li>• N-acetyl L-tyrosine 250-1,500 mg</li><li>• Rhodiola (Rhodiola rosea) root extract (4% Rosavins, 1% Salidroside) 100-300 mg</li><li>• Mucuna pruriens 200-800 mg</li><li>• L-theanine 100-500 mg bid</li><li>• Co-factors<ol style="list-style-type: none"><li>1. Vitamin C: 1,000-3,000 mg</li><li>2. Copper: 0.5-1 mg</li><li>3. Vitamin B3: 50 mg</li><li>4. P5P: 10-50 mg</li></ol></li></ul>

<p><b>High Epinephrine</b></p> <ul style="list-style-type: none"> <li>• L-theanine 100-500 mg bid</li> <li>• Rhodiola (Rhodiola rosea) root extract (4% Rosavins, 1% Salidroside) 1,000-2,000 mg</li> <li>• Co-factors (to support MAO/COMT) <ol style="list-style-type: none"> <li>1. Vitamin B2: 50 mg</li> <li>2. Vitamin B3: 100 mg</li> <li>3. Iron: 25-50 mg</li> <li>4. SAmE: 100-500 mg</li> </ol> </li> </ul>	<p><b>Low Epinephrine</b></p> <ul style="list-style-type: none"> <li>• N-acetyl L-tyrosine 250-1,500 mg</li> <li>• Rhodiola (Rhodiola rosea) root extract (4% Rosavins, 1% Salidroside) 100-300 mg</li> <li>• Mucuna pruriens 200-800 mg</li> <li>• L-theanine 100-500 mg bid</li> <li>• Co-factors <ol style="list-style-type: none"> <li>1. Vitamin C: 1,000-3,000 mg</li> <li>2. SAmE: 100-500 mg</li> <li>3. Magnesium: 150-500 mg</li> <li>4. P5P: 10-50 mg</li> <li>5. Adrenal support</li> </ol> </li> </ul>
<p><b>Elevated N/E Ratio</b></p> <ul style="list-style-type: none"> <li>• SAmE 100-500 mg</li> <li>• Magnesium 150-500 mg</li> <li>• Adrenal support</li> </ul>	
<p><b>High Glutamate</b></p> <ul style="list-style-type: none"> <li>• L-theanine 100-500 mg bid</li> <li>• Taurine 500-1,500 mg</li> <li>• N-acetyl cysteine 600 mg bid-tid</li> <li>• Cofactors (to support metabolism and conversion) <ol style="list-style-type: none"> <li>1. Vitamin B3: 100 mg</li> <li>2. P5P: 10-50 mg</li> <li>3. Magnesium: 150-500 mg (reduces glutamate toxicity)</li> </ol> </li> </ul>	<p><b>Low Glutamate</b></p> <ul style="list-style-type: none"> <li>• L-glutamine 1,000-3,000 mg</li> </ul>
<p><b>High Glycine</b></p> <ul style="list-style-type: none"> <li>• Alpha lipoic acid 200-1,200 mg</li> <li>• Cofactors (to support metabolism and conversion) <ol style="list-style-type: none"> <li>1. P5P: 10-50 mg</li> <li>2. SAmE 100-500 mg</li> </ol> </li> </ul>	<p><b>Low Glycine</b></p> <ul style="list-style-type: none"> <li>• Glycine 500-6,000 mg bid</li> <li>• L-theanine 100-500 mg bid</li> <li>• Cofactors (to support metabolism and conversion) <ol style="list-style-type: none"> <li>1. P5P: 10-50 mg</li> <li>2. Magnesium 150-500 mg</li> </ol> </li> </ul>
<p><b>High Histamine</b></p> <ul style="list-style-type: none"> <li>• Avoid histamine rich foods</li> <li>• Diamine oxidase 10,000-20,000 HDU no longer than 15 min before each histamine rich meal</li> <li>• Anti-inflammatory compounds (quercetin, curcumin, boswellia, flavonoids)</li> <li>• MSM 1,000-3,000 mg</li> <li>• Cofactors (to support metabolism and conversion) <ol style="list-style-type: none"> <li>1. SAmE 100-500 mg</li> <li>2. Vitamin B2: 50 mg</li> <li>3. Copper: 0.5-1 mg</li> <li>4. P5P: 10-50 mg</li> </ol> </li> </ul>	<p><b>Low Histamine</b></p> <ul style="list-style-type: none"> <li>• Histidine 500-1000 mg</li> <li>• Cofactors (to support metabolism and conversion) <ol style="list-style-type: none"> <li>1. P5P: 10-50 mg</li> <li>2. SAmE 100-500 mg</li> </ol> </li> </ul>
<p><b>High PEA</b></p> <ul style="list-style-type: none"> <li>• Dietary adjustments (decrease protein and fermented foods)</li> <li>• Probiotics</li> <li>• Support MAO for metabolism</li> </ul>	<p><b>Low PEA</b></p> <ul style="list-style-type: none"> <li>• DL/LPhenylalanine: 250-4000 mg</li> <li>• PEA 100 mg-500 mg</li> <li>• Probiotics</li> <li>• Cofactor (to support metabolism and conversion) <ol style="list-style-type: none"> <li>1. P5P: 10-50 mg</li> </ol> </li> </ul>

[\\*see page 4 for clinical pearls](#)

# NeuroComprehensive Profile

<p><b>High 5-HIAA</b></p> <ul style="list-style-type: none"> <li>Antioxidants             <ul style="list-style-type: none"> <li>i.e., Selenium, pycnogenol, curcumin, berberine and vitamin B12</li> </ul> </li> <li>St. John's Wort 300 mg tid</li> <li>Adrenal support</li> </ul>	<p><b>Low 5-HIAA</b></p> <ul style="list-style-type: none"> <li>Support MAO enzyme</li> <li>If serotonin levels are low, support serotonin secretion</li> </ul>
<p><b>High DOPAC</b></p> <ul style="list-style-type: none"> <li>Support COMT enzyme</li> <li>Antioxidants             <ul style="list-style-type: none"> <li>i.e., Selenium, pycnogenol, curcumin, berberine and vitamin B12</li> </ul> </li> <li>St. John's Wort 300 mg tid</li> <li>Adrenal support</li> </ul>	<p><b>Low DOPAC</b></p> <ul style="list-style-type: none"> <li>Support MAO enzyme</li> <li>If dopamine levels are low, support dopamine secretion</li> </ul>
<p><b>High 3-MT</b></p> <ul style="list-style-type: none"> <li>Support MAO enzyme</li> </ul>	<p><b>Low 3-MT</b></p> <ul style="list-style-type: none"> <li>Support COMT enzyme</li> <li>Antioxidants             <ul style="list-style-type: none"> <li>i.e., Selenium, pycnogenol, curcumin, berberine and vitamin B12</li> </ul> </li> <li>If dopamine levels are low, support dopamine secretion</li> </ul>
<p><b>High Normetanephrine</b></p> <ul style="list-style-type: none"> <li>Support MAO enzyme</li> </ul>	<p><b>Low Normetanephrine</b></p> <ul style="list-style-type: none"> <li>Support COMT enzyme</li> <li>If norepinephrine levels are low, support norepinephrine secretion</li> </ul>
<p><b>High Meta nephrine</b></p> <ul style="list-style-type: none"> <li>Support MAO enzyme</li> </ul>	<p><b>Low Metanephrine</b></p> <ul style="list-style-type: none"> <li>Support COMT enzyme</li> <li>If epinephrine levels are low, support epinephrine secretion</li> </ul>
<p><b>High Tryptamine</b></p> <ul style="list-style-type: none"> <li>If tryptamine is high, but serotonin is low, the enzymes of serotonin synthesis (cofactors: SAMe, vitamins B3, D, zinc, molybdenum, iron) may be inhibited.</li> <li>Support MAO for metabolism</li> </ul>	<p><b>Low Tryptamine</b></p> <ul style="list-style-type: none"> <li>P5P: 10-50 mg</li> </ul>
<p><b>High Tyrosine</b></p> <ul style="list-style-type: none"> <li>Iron, SAMe, Vitamins B3, C, D</li> </ul>	<p><b>Low Tyrosine</b></p> <ul style="list-style-type: none"> <li>DL/L-Phenylalanine: 250-4,000 mg</li> <li>Tyrosine 500-2,500 mg</li> </ul>
<p><b>High Tyramine</b></p> <ul style="list-style-type: none"> <li>If tyramine is high, but dopamine is low, the enzymes of dopamine synthesis (cofactors: SAMe, vitamins B3, D, zinc, molybdenum, iron) may be inhibited.</li> <li>Support MAO for metabolism</li> </ul>	<p><b>Low Tyramine</b></p> <ul style="list-style-type: none"> <li>Support COMT enzyme</li> <li>If norepinephrine levels are low, support norepinephrine secretion</li> </ul>
<p><b>High Taurine</b></p> <ul style="list-style-type: none"> <li>Antioxidants</li> <li>Probiotics</li> </ul>	<p><b>Low Taurine</b></p> <ul style="list-style-type: none"> <li>Taurine 500-2,000 mg</li> <li>Cysteine 500-1,500 mg</li> <li>Co-factors             <ol style="list-style-type: none"> <li>P5P: 10-50 mg</li> <li>Iron: 25-50 mg</li> <li>Molybdenum: 250-500 mcg</li> </ol> </li> </ul>

## Metabolism Support

- MAO enzyme activity supported by
  - Vitamin B2: 50 mg (ideally riboflavin 5 phosphate)
  - Vitamin B3: 100 mg
  - Iron: 25-50 mg
- COMT enzyme activity supported by
  - SAMe: 100-500 mg
  - Mg: 150-500 mg
  - MTHF: 400-5,000 mcg
  - Methylcobalamin: 1,000-5,000 mcg

## Clinical Pearls: General Treatment Considerations

- Because of their importance as co-factors, consider generalized support in the form of methylated B vitamins and Mg for every patient with an imbalance.
- Fish oil (EPA/DHA) is neuromodulatory, and exhibits antidepressant effects.
- SAME: endogenous levels can be supported with Mg, MTHF and methylcobalamin
  - Mg: 150-500 mg
  - MTHF: 400-5,000 mcg
  - Methylcobalamin: 1,000-5,000 mcg
- L-theanine
  - Best given BID as it has a short ½ life
  - Acts as a GABA agonist. Neuroinhibitory and parasympathetic
  - Antagonistic effects on glutamate receptors
  - Acts to optimize serotonin, dopamine and GABA levels, promoting overall neurotransmitter balance
- Magnesium and vitamin C can be given to bowel tolerance
- Iron best given as citrate or bisglycinate.
- A derivative of GABA, phenibut acts as a GABA agonist. Phenibut will not increase GABA secretion.
- Adaptogenic herbs treat both the adrenal cortex and the medulla, and therefore can modulate cortisol, dopamine, norepinephrine and epinephrine levels.
- Cytokines associated with inflammation can influence neurotransmitter secretion. Identifying and addressing inflammation is an essential component of any treatment plan.