



**Hypo-serotonergic™ conditions** occur when serotonin concentrations are not enough, low, inadequate, depleted, deficient, or suboptimal on a modified normal diet.™

**Hypo-dopaminergic™ conditions** occur when dopamine concentrations are not enough, low, inadequate, depleted, deficient, or suboptimal on a modified normal diet.™

**Hypo-glutathionemia™ conditions** occur when glutathione concentrations are not enough, low, inadequate, depleted, deficient, or suboptimal on a modified normal diet.™

- Giving only *serotonin precursors* can deplete dopamine and glutathione.™
- Giving only *dopamine precursors* can deplete serotonin and glutathione.™
- Giving only *glutathione or glutathione precursors* can deplete serotonin and dopamine.™

The centrally acting monoamines (monoamines) are serotonin, dopamine, norepinephrine, and epinephrine.

For the management of **hypo-serotonergic™ conditions** or states that may accompany **OCD**

A **hypo-serotonergic condition** or state often accompanies OCD (see the right column).

After diagnosing OCD, formulate a differential diagnosis to rule out accompanying issues, including a **hypo-serotonergic condition** or state.

Consider using an empirical trial of the **hypo-serotonergic-hypo-dopaminergic condition** starting point protocol.

Management of the **hypo-serotonergic condition** or state which may accompany OCD requires establishing serotonin concentrations higher than are possible with modification of the normal diet.

**OCD** may be accompanied by symptoms arising from a **hypo-serotonergic condition** or a **hypo-dopaminergic™ condition**

"Obsessive compulsive disorder (OCD) and bipolar disorder can be comorbid, although the exact pathogenesis of obsessive compulsive symptoms (OCS) in bipolar disorder is not clear. Bipolar disorder and OCD can co-occur either due to independent aetiologies or due to the **hypo-serotonergic** state caused by treatment with atypical antipsychotics."

Parkar, S. et al. Treatment of bipolar mania with obsessive symptoms with clozapine: a case report SL J Psychiatry 2013; 4 (2):42-43

"The new finding of a SERT decrease and a possible elevation in 5-HT<sub>2a</sub>R in individuals who had increased DARE suggest a condition of increased phasic DA release modulated by low serotonin (5-HT) in concomitant OCD."

Wong, D. et al. PET imaging of dopamine and serotonin in Tourette's Syndrome NeuroImage 31 (2006) T44-T186

"Low serotonin levels have been associated with impulsive and aggressive behaviors,<sup>3</sup> and enhancement of central serotonin neurotransmission could ameliorate heightened sexual desire and compulsivity associated with such sexual behaviors. Lithium has been shown to have some efficacy in similar behaviors associated with obsessive-compulsive features, such as pathological gambling."

Shahani, L. J Neuropsychiatry Clin Use of Lithium for Sexual Obsessions in Asperger's Disorder Neurosci 24:4, Fall 2012

"There is evidence supporting the notion that serotonin plays a mediator role in the hyperactive and impulsive behaviors associated with ADHD [Gainetdinov et al., 1999; Quist and Kennedy, 2001]. Ickowicz, A. et al.]" The Serotonin Receptor HTR1B: Gene Polymorphisms in Attention Deficit Hyperactivity Disorder American Journal of Medical Genetics Part B (Neuropsychiatric Genetics) 144B:121-125 (2007)

**Hypo-serotonergic / Hypo-dopaminergic Condition Starting Point Protocol™**

		AM	NOON	4 pm
Day-0	Level 1	3 R&R	---	3 R&R
Day-7	Level 2	3 R&R	3 R&R	2 R&R Sans
Day-14	Level 3	3 R&R	3 R&R	4 R&R Sans
Day-21 - If symptoms are still present after seven days on level 3 submit a specimen for serotonin and dopamine assay to <b>DBS Labs, 1-877-476-7229</b>				

**Figure 1:** If symptoms have resolved completely after seven days on any level, do not increase to the next level, do not order testing. Increase to the next level if symptoms are still present after seven days. **Order lab testing after seven days on level 3 if symptoms are still present. Lab testing determines if the serotonin or dopamine protocol is required.** Dosing levels 1-3 do not require lab testing. Do not increase to level 4 through level 9 or switch to the dopamine protocol without first obtaining a serotonin and dopamine assay.

