PsychoEndocrinology: The Role of Thyrotropin Releasing Hormone (TRH) in Anxiety and Depression

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President, American Society of Endobiogenic Medicine and Integrative Physiology
Medical Director, Full Spectrum Health: An Endobiogenic Medical Clinic
Goals

• Review the scope of anxiety
• Understand role of hormone TRH
  – Anxiety
  – Depression physiology
• Learn exam, historical findings related to TRH
• Understand clinical applications to treatment
INTRODUCTION
Prevalence of Anxiety

- Lifetime: 28.8%\(^1\)
- 12-month: 18%\(^1\)
- Reported onset: 4-11 years\(^1,2\)
- Chronic course\(^3\)

Efficacy of Treatment

• 30% fail to respond (Benzo’s)\(^7\)
• Weaning failure rate 85%\(^8\)
• Treatment and post\(^9\)
  – Cognitive decline, impaired productivity
  – Persists up to 3 yrs post discontinuation

“It has become apparent that in the solution of these problems psychiatry will be brought to medicine and medicine will come to psychiatry.”

Manfred Sakel, MD, 1938, The Future of Psychiatry

SYSTEMS APPROACH TO ANXIETY
Systems Theory

• Whole > sum of parts
• Quantitative
  – Number of subsystems
  – Number of relationships
• Qualitative
  – Quality of relationships
  – Degree of integration
  – Relative efficiency in relationship to demand
Interrelatedness and Integration
Endobiogeny: Global systems theory

- Microscopic ($10^{-6}$-$10^{-3}$m)
  - Subcellular
  - Cellular
  - Tissue segments

- Mesoscopic ($10^{-3}$-$10^{-1}$m)
  - Gross tissue
  - Organs
  - Organism

- Macroscopic ($>10^0$m)
  - Social
  - Symbiotic
  - Cosmobiologic

- Central
- Peripheral
- Endocrine
- Autonomic
- Multifactorial
Endobiogeny (cont.)

• Qualitative
  – Heuristic
  – Phenomenologic

• Quantitative
  – Biomarkers
  – Modeling

---


### TABLE 1 | Moving beyond scientism and skepticism in global mental health: integrative approaches to diagnosis, pathogenesis, and intervention.

<table>
<thead>
<tr>
<th></th>
<th>Scientism</th>
<th>Skepticism</th>
<th>Integrative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnosis</strong></td>
<td>Diagnostic systems rely on essentialist categories or natural kinds. Assessment systems will be ultimately be supported by data on endophenotypes.</td>
<td>Mental illness is expressed and experienced differently in different sociocultural contexts. Symptoms vary from time to time and place to place.</td>
<td>Mental illness is a complex reality. Nosologies are theory bound and value laden, but may improve as the relevant science and debate advance.</td>
</tr>
<tr>
<td><strong>Pathogenesis</strong></td>
<td>May approach causality in terms of covering laws. May focus on a single set of associations, such as those which characterize the health care system.</td>
<td>May emphasize the role of sociocultural values and powers in explanations. May focus on differences in conceptualization of disorders across history and geography.</td>
<td>Emphasizes that a broad range of factors are involved in the pathogenesis of mental disorders, with causal mechanisms operating at multiple interacting levels.</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td>May take a single bullet approach, looking for focused interventions, whether biological or community focused that will target the essence of the disorder.</td>
<td>May emphasize that interventions reflect local values and powers. Both biological and community-focused interventions reinforce existing societal structures.</td>
<td>Incorporates a range of insights about the nature of mental disorders, and targets a broad range of factors involved in their pathogenesis, including biological and social ones.</td>
</tr>
</tbody>
</table>

Systems Integration in Psychiatry

• 1850’s: NeuroPsychoPharmacology
• 1938: BioPsychoPharmacology\(^{19}\)
• 1963: Benzodiazepines
• 1969: Endocrino-Psychiatry
• 2000’s: Integrated Network Psychiatry\(^{24}\)

Systems Integration (cont.)

• Brain sequestered, *not* isolated

• Neurohormones
  – Dopamine
  – TRH
  – Oxytocin

• Neurosteroids
  – Cortisol
  – Aldosterone
  – Testosterone

TRH, HISTAMINES AND ANXIETY
Alpha Sympathetic: Noradrenaline

- Physiologic: ↑ SNR* 34
  - ↑ environmental sensitivity 35
  - ↓ feedback excitation
  - ↓ feedback inhibition 34
  - ↑ afferent input
- Sustained sensory awareness
- Cognitive flexibility 36
- Supraphysiologic
  - False-positive ↑ SNR* → Anxiety


*SNR: Signal-to-Noise Ratio*
## Anxious Behavior and NA

**Table 1**
Changes in brain noradrenaline release and behavior caused by various stresses and anxiogenic drugs and their modifications by drugs

<table>
<thead>
<tr>
<th>Brain regions</th>
<th>Immobilization stress</th>
<th>Psychological stress</th>
<th>Conditioned fear</th>
<th>β-Carbolines</th>
<th>Yohimbine</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Non-drug</td>
<td>DZP</td>
<td>NAL</td>
<td>MOR</td>
<td>β-END</td>
</tr>
<tr>
<td>Hypothalamus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amygdala</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locus coeruleus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hippocampus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerebral cortex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative emotional responses</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

- Increase
- Enhancement
- Attenuation
- No change

DZP: Diazepam; NAL: Naloxone; MOR: Morphine; β-END: β-Endorphin; Met-E: [Met']-Enkephalin
ALP: Alprazolam

Histamines and Arousal States

• Origin: Hypothalamus
• Highly conserved
• Wide distribution
• Role
  – Arousal, Alertness
  – Cognition, Memory
  – Mood, Pain perception

Histamines: Cognitive-Behavioral

• Physiologic: $\alpha$-brainwave$^{1,2}$
  – Calm alertness
  – Novelty-induced arousal

• Supraphysiologic:
  – ↓ pleasure and reward
  – ↑ anxiety and aversive behavior.$^{1,3}$

Special role of TRH

• Neuropeptide/Neurohormone (1969)\textsuperscript{27}
• Ancient evolutionary lineage\textsuperscript{25,26}
• Neuromodulator
  – Central: 65\% extra-pituitary\textsuperscript{28}
  – Peripheral\textsuperscript{28}

Integrated Central-Peripheral TRH

Exocrine Pancreas-CNS 2

Breakdown of nutrients: Proteins

Frontal Lobe logical thought

Intense Energy: Glucose

Intense Imagination, Emotions and Memory

TSH

Breakdown of ideas

TRH Function

• Neuromodulator
  – Mood
  – Pain
  – Quality and Rate of awareness, perception, planning, association, action

• Accelerator of neuronal metabolic function

• Anxiety: manage and regulate$^{29,30}$


### TRH somatic symptoms by receptor type and region of distribution

<table>
<thead>
<tr>
<th>Receptor</th>
<th>CNS</th>
<th>Symptom</th>
</tr>
</thead>
</table>
| TRH R1   | Pituitary → Peripheral hyperthyroidism | Tremors  
Tachycardia |
|          | Cranial nerves | Twitching: eyelid, lip, etc. |
|          | Vagus nerve, motor nucleus | Diarrhea  
Sweating |
|          | Adrenal medulla | Tachycardia, Hyperdynamic heart  
Rush of blood to the head |
|          | Pancreas, endocrine | Hyperglycemia (Glucagon)  
Hypoglycemia (Insulin) |
| TRH R2   | Frontal cortex | Rapid thoughts  
Hyper-loquaciousness |
|          | Hippocampus | Recall of past events |
|          | Reticular activating system | Hyper-alertness  
Insomnia |
|          | Retina | Altered Chronobiology:  
- Seasonal psychiatric disorders,  
- Insomnia |
|          | Cerebellum | Clumsiness |

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Knock Out Rats

• KO* TRH R1:
  – Hypothyroid
  – Hyperglycemic
  – Anxious\textsuperscript{33}

• Female KO* TRH R2
  – Lower anxiety\textsuperscript{31}

• Conclusions
  – TRH Neurohormone (R1): not anxiogenic
  – TRH Neurotransmitter (R2): \textit{potentially} anxiogenic

\textsuperscript{31} Sun Y, Zupan B, Raaka BM, Toth M, Gershengorn MC. TRH-receptor-type-2-deficient mice are euthyroid and exhibit increased depression and reduced anxiety phenotypes. \textit{Neuropsychopharmacology : official publication of the American College of Neuropsychopharmacology}. 2009;34(6):1601-1608.


*KO: Knock out
TRH, NA, Histamine

**Hypothalamic Nuclei**

- **Parvoventricular Neuromodulation**
  - TRH
  - GABA

- **Tuberomamillary Alertness**
  - Histamine
  - TRH

- **Venterolateral Preoptic Relaxation**
  - GABA

**Limbic Area**

- Memory consolidation
- Emotional response
- Memory Recall

**NA Locus Ceruleus**

- Thyroid Relaunching
- Cortico-Relaunching

**Vigilance**

- H1,2

**Key**

- GABA: γ-Aminobutyric acid
- NA: Noradrenaline
- TRH: Thyrotropin Releasing Hormone

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## Somatic Anxiety symptoms related to the interplay of NA, TRH and Histamine

<table>
<thead>
<tr>
<th>Category</th>
<th>Symptom</th>
<th>NA</th>
<th>Histamine</th>
<th>TRH</th>
<th>Other</th>
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<tbody>
<tr>
<td>Autonomic Arousal</td>
<td>Palpitations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sweating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trembling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dry mouth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chest/Abdomen</td>
<td>Dyspnea</td>
<td></td>
<td></td>
<td></td>
<td>Insufficient $\beta\Sigma$</td>
</tr>
<tr>
<td></td>
<td>Chest pain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nausea</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain and Mind</td>
<td>Dizzy, Light-headed</td>
<td></td>
<td></td>
<td></td>
<td>Low cortisol</td>
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<tr>
<td></td>
<td>Derealization</td>
<td></td>
<td></td>
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<td>Insufficient Dopamine</td>
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<tr>
<td></td>
<td>Insufficient $\beta\Sigma$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fear of loosing control, of Dying</td>
<td></td>
<td></td>
<td></td>
<td>Excess Dopamine</td>
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<tr>
<td>General</td>
<td>Hot flashes</td>
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<td></td>
<td></td>
<td>Reactive $\pi\Sigma$</td>
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<tr>
<td></td>
<td>Numbness, Tingling</td>
<td></td>
<td></td>
<td></td>
<td>Diminished circulation</td>
</tr>
<tr>
<td></td>
<td>Muscle tension</td>
<td></td>
<td></td>
<td></td>
<td>Insufficient $\beta\Sigma$</td>
</tr>
<tr>
<td></td>
<td>Restlessness of muscles</td>
<td></td>
<td></td>
<td></td>
<td>Insufficient $\beta\Sigma$</td>
</tr>
<tr>
<td></td>
<td>Insomnia from excessive worry</td>
<td></td>
<td></td>
<td></td>
<td>Dopamine, Glutamate,</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Insufficient GABA</td>
</tr>
</tbody>
</table>

Key: $\beta\Sigma$: beta sympathetic, $\pi\Sigma$: parasympathetic, GABA: $\gamma$-amino-butyric acid, NA: Noradrenalin ($\alpha\Sigma$), TRH: Thyrotropin releasing hormone

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TRH and Depression

• Associated with depression$^{1-3}$
  – TRH therapy supraphysiologic
  – *Inhibits* TRH

• Endobiogeny:
  – TRH-Serotonin$^4$
  – TRH-Pancreas$^2$

REVIEW: Adaptive response to aggression

CRH

ACTH

Cortisol

Adrenal Cortex

global function

Mobilization

Endurance

αΣ

βΣ

AGGRESSION

Glucose

Movement
Central depression: Type 1 DISADAPTATION

CRH → ACTH → αΣ

Mobilization → Endurance

Cortisol → Adrenal Cortex global function

Glucose → Movement


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Central Depression: Reduction of Central Serotonin

Blood Brain Barrier

Glucose → Central Serotonin → Dopamine → TRH

αΣ

Glucagon

βΣ

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CLINICAL PRACTICE
# Top 6 symptoms: Thyrotropic and Pancreas

<table>
<thead>
<tr>
<th>Symptom</th>
<th>TRH</th>
<th>TS</th>
<th>T4</th>
<th>T3</th>
<th>Pancreas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dreams: in color, vivid and/or with sound</td>
<td>↑</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety with tremors</td>
<td>↑</td>
<td></td>
<td>±</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explosive anger</td>
<td>↑</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Mucous with dairy</td>
<td>↑</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Heat intolerance</td>
<td></td>
<td></td>
<td>↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold intolerance</td>
<td></td>
<td></td>
<td></td>
<td>↑</td>
<td></td>
</tr>
</tbody>
</table>

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## Top 6 signs: Thyrotropic and Pancreas

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>TRH</th>
<th>TS</th>
<th>T4</th>
<th>T3</th>
<th>Pancreas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colon, hepatic flexure</td>
<td>↑</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deep tendon reflex, brisk</td>
<td>↑</td>
<td></td>
<td></td>
<td>±</td>
<td></td>
</tr>
<tr>
<td>Tenderness, pesorinum</td>
<td></td>
<td>↑</td>
<td>↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenderness to right of umbilicus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exocrine</td>
</tr>
<tr>
<td>Tenderness to left of umbilicus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Endocrine</td>
</tr>
</tbody>
</table>
Cartography of Endo-Enteric relationships

- LH
- TRH/TSH
- FSH
- ACTH
- GH
- PL

Proteins
Carbs
Carbs, lipids
Trace Metals
Water Electrolytes

reaction to depression
depression

Expert opinion only

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Peripheral Signs

Expert opinion only

- Painful 'crow's foot'
  - Left: pelvic congestion
  - Right: gall bladder

TSH ↑
T4 ↓

(left > right as LH more easily distributed than FSH)
Liver congestion:
- Secretory
- Circulatory

Splanchnic congestion →
hepato-pancreatic blockage

Murphy’s Point:
- Congestion:
  - Sphincter of Oddi

Hepatic congestion, extra-hepatic:
- Sphincter of Oddi, Splanchnic congestion, Duodenal plexus

Exocrine pancreatic congestion

General pancreatic congestion

Zone of distress

Endocrine pancreas overtaxed

Expert opinion only:
Based on superficial referral points of viscera

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Therapeutics for TRH

• Motherwort (*Leonurus cardiaca*)
  – Reduces TRH,\(^1\) Expressions of anxiety\(^1,2\)
  – Tea, Tincture, Dry extract

Therapeutics for TRH

• *Expert opinion only*
  – Pichi (*Fabiana imbricata)*:
    • Tea, Tincture
  – Lithy tree (*Viburnum lantanum)*
    • Gemmotherapy
  – Lac caninum
    • Homeopathic: 3x-9c
# Synergistic therapies

<table>
<thead>
<tr>
<th>Medicinal plant</th>
<th>↓NA</th>
<th>GABA</th>
<th>Endorphins</th>
<th>Thyroid, peripheral</th>
<th>Pancreas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passionflower</td>
<td>✷</td>
<td>✷</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motherwort</td>
<td>✷</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California poppy</td>
<td>✷</td>
<td></td>
<td>✷</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lemon balm</td>
<td>✷</td>
<td>✷</td>
<td></td>
<td></td>
<td>✷</td>
</tr>
<tr>
<td>Agrimony</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✷</td>
</tr>
<tr>
<td>GABA 50-100 mg BID-TID</td>
<td></td>
<td>✷</td>
<td></td>
<td></td>
<td>✷</td>
</tr>
</tbody>
</table>
Recall: TRH, NA, Histamine

Hypothalamic Nuclei

TRH - Neuromodulation
Histamine - Alertness
GABA - Relaxation

TRH R1 - Thyroid Relaunching
Motherwort - Stimulation
Melissa - Inhibition

Vigilance

NA - Locus Ceruleus
CA Poppy - Cortico-Relaunching

Memory consolidation
Emotional response
Memory Recall

Limbic Area

Key: GABA: γ-Aminobutyric acid, NA: Noradrenaline, TRH: Thyrotropin Releasing Hormone

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ENDOBIOGENIC APPROACH TO TREATMENT
General considerations in treating anxiety and depression

• Understand patient
• Do not minimize symptoms
• Respect complexity
• Evaluate origins
Treatment priorities

• Symptomatic
  – GABA 50-100 mg BID-TID
  – Phytocalm 2 caps BID-TID

• Terrain: Anxiety
  – Alpha: Passionflower
    • Tisane: 1 tsp/1 c. water 5-8 minutes; 1 c. TID
    • Mother Tincture: 1-3 ml BID-TID in warm water
  – TRH:
    • Phytocalm 1 capsule TID
    • Lithy tree GM (Expert opinion)
      – D1: 1-3 ml BID-TID
      – Concentrate: 5-15 drops BID-TID
    • Lac caninum 9c 2 pellets BID (Expert opinion)
Treatment: Depression

• Beta-Sympathetic:
  – SAMe\(^1\) 100 mg BID

• Adaptability, Adrenal cortex
  – Rhodiola rosea\(^2\) 200 mg (4:1) 1 BID

Adrenaline: increased production

1. SAMe (S-adenosyl methionine)
   - Dose: 100-200 mg twice per day *before meal*
Treatment priorities

• Dietary changes
  – Small frequent meals
  – Low glycemic foods
    • Whole grains
    • Leafy green vegetables

• Psychotherapy + Skills
“The human being is entirely conditioned by his instrument of expression and can express no more than his nervous system, brain and glands permit.” Alice A. Bailey

CASE STUDY IN PHYSIOPSYCHIATRY: BIOPHENOMENOLOGY ACCORDING TO ENDOBIOGENY
Global Systems Approach to Anxiety

SCALE

>10^0m: Macroscopic
  • Cosmobiologic
  • Symbiotic
  • Social

10^{-3} - 10^{-1}m: Mesoscopic
  • Organism
  • Organs
  • Tissues

10^{-6} - 10^{-3}m: Microscopic
  • Cellular
  • Subcellular
  • DNA

INDEX

- Permeability index corr.
- Entanglement score
- Worry score
- Cognitive diss. Index adj.
- Traumatic Memory index
- Thought index
- Locus ceruleus index adj.
- Serotonin index
- Prolactin index (Dopamine)
- Locus ceruleus index
- Histamine Index
- TRH/TSH, βMSH/αMSH
- Thyroid metabolic index
- Adrenal Yield
- Genital ratio
- Insulin / Insulin Resistance
- Harmful free radical index
- Passive cellular permeability

Modified from Looijestijn et. al. Neuroscience and biobehavioral reviews. 2015;59:238-250.
Case Study

• 32 yo female, transgender, h/o
  – Chronic Pain (10 yr)
  – Chronic fatigue Syndrome (10 yr)
  – Major depression (12 yr)
  – Generalized Anxiety Disorder (>15 yr)

• Pregabalin 100 mg qHS
• Buproprion 150 mg BID
• PRN: prescribed by other physicians
  – Diazepam 5 mg
  – Lorazepam 0.5 mg
  – Tramadol 50 mg
  – Cyclobenzaprine 5 mg
  – Medical marijuana
# Endobiogenic Biologic Assessment

<table>
<thead>
<tr>
<th>Index</th>
<th>10/2014</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>βMSH/αMSH index</td>
<td>10.6</td>
<td>6</td>
<td>8</td>
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<tr>
<td>Peripheral Serotonin index</td>
<td>22.3</td>
<td>1.5</td>
<td>7.5</td>
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<tr>
<td>Prolactin index</td>
<td>0.30</td>
<td>0.8</td>
<td>1.2</td>
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<tr>
<td>Thyroid metabolic index</td>
<td>10.6</td>
<td>3.5</td>
<td>5.5</td>
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<tr>
<td>Adrenal yield score</td>
<td>41</td>
<td>3.15</td>
<td>13.50</td>
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<tr>
<td>Insulin resistance index</td>
<td>0.21</td>
<td>0.75</td>
<td>1.25</td>
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<tr>
<td>Harmful free radicals</td>
<td>288</td>
<td>2</td>
<td>6</td>
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<tr>
<td>Passive membrane permeability</td>
<td>110</td>
<td>4</td>
<td>9</td>
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</table>
## Endobiogenic Phenomenological Assessment

<table>
<thead>
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<th>Index</th>
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<th>Low</th>
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<tr>
<td>Locus ceruleus adjusted</td>
<td>2,970</td>
<td>7</td>
<td>450</td>
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<tr>
<td>Traumatic memory index</td>
<td>613</td>
<td>0.08</td>
<td>6</td>
</tr>
<tr>
<td>Permeability index adj.</td>
<td>506,996</td>
<td>1.76</td>
<td>1,091</td>
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<td>1,486</td>
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</tbody>
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Case Study (cont.) Intervention:

• *Passiflora incarnata* (Passionflower) MT
  – Anxiolytic, acts on GABA\textsubscript{A} receptors, Enhances Benzo activity\textsuperscript{1}
  – Equivalent to Oxazepam 30 mg\textsuperscript{2}

Case Study (cont.) Intervention:

• Phytocalm (Time Labs, Pocatello, ID)
  – Leonurus cardiaca (Motherwort)
    • Reduces TRH,¹ Expressions of anxiety¹,²
  – *Eschscholtzia californica* (California poppy)
    • Inhibit Dopamine, Adrenaline³
    • Augments enkephalins (opioid-like)⁴
  – *Melissa officinalis* (Lemon balm)
    • Reduces Noradrenaline
    • Anxiolytic, GABA-ergic, Cognitive Enhancer⁵,⁶

Outcomes

• 2/2015: 4 months
  – Discontinued all PRN medications
  – Reduced anxiety, spontaneous crying, depression, pain
  – Increase mobility
## Endobiogenic Biologic Assessment

<table>
<thead>
<tr>
<th>Index</th>
<th>10/2014</th>
<th>2/2015</th>
<th>Low</th>
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<tbody>
<tr>
<td>βMSH/αMSH index</td>
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Follow Up

• 7 months post-treatment
  – 5/2015: D/C Buproprion (self-managed)

• 9 months post-treatment, 2 months off Buproprion
  – 7/2015: Worsening of symptoms
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# Sourcing Products

<table>
<thead>
<tr>
<th>Therapeutic</th>
<th>Sources</th>
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</table>
| Tisanes       | Starwest Botanicals: [www.starwest-botanicals.com](http://www.starwest-botanicals.com)  
|               | Mountain Rose: [www.mountainroseherbs.com](http://www.mountainroseherbs.com)     |
| Tincture      | Time Labs: [www.timelabs.com](http://www.timelabs.com)                    |
|               | Seroyal: [www.seroyal.com](http://www.seroyal.com)                        |
|               | Wise woman: [www.wisewomanherbals.com](http://www.wisewomanherbals.com)    |
| Phytocalm     | Time labs: [www.timelabs.com](http://www.timelabs.com)                    |
| Gemmotherapy  | Time labs: [www.timelabs.com](http://www.timelabs.com)                    |
|               | Seroyal: [www.seroyal.com](http://www.seroyal.com)                        |
CONCLUSION
Conclusions

• Anxiety multifactorial
  – Biological
  – Phenomenological
• Future of Integrative Psychiatry
• Global systems theory
• Research into Endobiogeny
Discussion, Thoughts and Questions

• Learn More
  – www.endobiogeny.com
  – www.learnendo.lt

• Global Training Initiative
  – kmhedayat@fshcenter.com
  – info@endobiogeny.com