Botanical Boot Camp: Common Supplements and Herbs and How to Evaluate Them
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Is the Supplement World the Wild, Wild West?

What is IM
- Broad Categories
  - Conventional Med
  - Nutrition/Diet
  - Exercise/Physical Activity
  - Whole systems (TCM, Ayurveda, Naturopathy, Homeopathy)
  - Botanical med
  - Supplements
  - Energy Medicine (Reiki, Healing touch, Qigong etc)
  - Spirituality
    - Manual Medicine (OMM, Chiropractic, Massage, PT, Zero balancing, reflexology etc)
  - Mind-Body Medicine (Hypnosis, Biofeedback, Guided imagery, Creative therapy etc)

Who is using it and what are they using
- In the US, (1997)~1/3 of all adults use CAM
- Visits to CAM providers
  - 1990: 420 million, 1997: 629 million (up by 47%)
  - 1997 estimated 21.2 billion dollars (~12 billion out of pocket)
  - 2007 14 Billion spent out of pocket to treat pain, 33.9 total out of pocket for all issues (NIH)
  - 2015 40 Billion dollars spent on botanicals and supplements alone
- More recent estimates~40-62% adults using CAM (40% NIH)
  - Higher levels of education and economic status

- The recent events in NY and the NY AG regarding Walmart, Target, GNC etc is the recent event raising the issues about supplements/botanicals
- Multiple botanicals tested negative for what they claimed and had in them contaminants.
- Critics point out that this is a common occurrence and show that the FDA doesn’t regulate products.
- Critics also say that it re-enforces that there is no place for these supplements in health care even though the two would be unrelated

- Once this hit the news: multiple reports in all media
- Who has seen any follow up?
- Is it true?
- Is there regulation?
- Is there a direct correlation to price?
- How do we know?
- What do I like to use for the conditions we discussed today?
Follow up

- Testing called into question:
  - DNA testing doesn’t pick up extract
  - Also misses treated plants where DNA breaks down.
- GNC:
  - showed testing process—met all regulations
  - Agreed to more stringent testing
- No news: Hardly anyone carried it.

Preparations

- **Infusion** — a water extraction of soluble compounds from fresh or dried flowers, leaves, or seeds in hot water. Infusions are prepared by steeping the herb in hot water for a minimum of 5-10 minutes.
- **Decoction** — an herbal infusion prepared by simmering roots, barks, or other hard plant parts in a prolonged period of time. Decoctions can be made from fresh plant material but are generally prepared from dried. Prolonged heat is necessary to thoroughly extract the root and decoction, which will allow for maximum extraction of water-soluble constituents. Decocations are the most popular method for preparing herbs throughout most of the world.
- **Tincture** — a hydroethanolic preparation of plant material usually obtained using 1 part of herbal drug and 5 parts of extraction solvent (1:5). Tinctures can also be made from cold water in a procedure where 1 part by mass or volume is equivalent to 10 parts by mass of the herbal drug (1:10). (Also referred to as alcohol extract.)
  - The strength of a hydroethanolic extract is based on the relative metric weight of herb to the total metric volume of the solvent used for extraction. The dilution may vary from 1:1 to 1:5 (or greater) when preparing a fluid extract and tincture, respectively.
  - 1L of herb has been fully exhausted to yield 1L of extract in a fluid extract (1:1).
  - 1L of herb has been fully exhausted to yield 5L of tincture (1:5).

How do we know

- Strongly recommend looking at 3 party reviewers
  - Look not only at individual products but also trends
  - In general avoid proprietary blends unless trusted supplier and tells individual doses

What Are My Common Resources

- Natural Standards and Natural Medicine Database
- NSF International
  - http://www.nsf.org/
- United States Pharmacopia
  - http://www.usp.org/
- Consumerlabs.com
  - www.consumerlabs.com
Valerian
Believed to be helpful, small human studies

Inositol

Lemon balm
Part of B complex, for cell membranes. some studies show improvement

Bacopa
Smells bad
Compared with placebo, kava extract appears to be an effective symptomatic treatment option for anxiety.

Chamomile
Numerous studies with valerian combinations. Small numbers per study but effective
“Treating depression comorbid with anxiety” Feusner JH et al. The American journal of psychiatry 1995

Rhodiola
Popular with the Vikings for enhancing mental and physical endurance


double blind, placebo

Kava is relatively safe for short term treatment (1 to 3 weeks)

Depression
Bacopa
Smells bad
“Possible actives in Lemon balm” Pleydell P. 2006

Passion flower
Popular in other Scandanavian countries. It is used to increase the capacity for mental work and learning.
“Possible actions in rhoditic rosmarinus, rosmarin and salidroside.” JD et al. Journal of clinical pharmacology. 2003

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Depression

• **Omega 3s**
  – A number of meta-analyses/systematic reviews evaluating the effectiveness of omega-3 fatty acids in depression
  
  
  
  - More recent meta-analysis of 15 trials involving 916 subjects suggests that omega-3 fatty acid supplement with EPA greater or equal to 60 percent of total EPA and DHA showed highest benefit against primary depression

• **B vitamins**

• **Iron**

• **Zinc**
  – studies have reported an association between low zinc status and depression, and evidence that zinc supplementation has an antidepressant effect
  - "Zinc: the new antidepressant?" Levenson CW. Nutrition reviews. 2006

• **Vit D**
  – Association in adults with vit D def and mood disorder
  

  - Roughly 400-800 U when little, 1000 U when older, 2000 Units adolescents.

• **SAMe**: seratonin precursor
  – A meta-analysis of placebo-controlled studies on SAMe in depressed mood confirms efficacy and safety equivalent to conventional anti-depressants

  - "St. John’s wort and S-adenosyl methionine as ‘natural’ alternatives to conventional antidepressants in the era of the suicidality boxed warning: what is the evidence for clinically relevant benefit?" Carpenter DJ. Altern Med Rev. 2011

  - Patients not responded/partially responded conventional antidepressants, titrating SAMe 800mg to 1600mg/day improves response rate of clinical improvement

• **Tryptophan**

• **Rhodiola**:
  – Several clinical trials: rhodiola extract (SHR-5)-anti-fatigue, increases mental performance
  
  - Reduces “burnout” in patients with chronic fatigue
  
  - 340 or 680 mg/day over a 6-week period vs placebo-sig improvement

• **St johns wort**
  – 29 trials (5489 patients)
  
  - 18 with placebo
  
  - 17 standard antidepressants

  - Conclusion: St. John’s wort (SJW)
    
    - superior to placebo in patients with major depression
    
    - are similarly effective as standard antidepressants
    
    - have fewer side effects than standard antidepressants

Placebo-controlled studies
- Equivalent efficacy to tricyclic anti-depressants
- 3 studies equivalent efficacy to SSRI's: fluoxetine, sertraline, and paroxetine
  - "Equivalence of St John's wort extract (S. J. E.) and fluoxetine: a randomized controlled study in mild moderate depression." Schrader E, International Journal of Mental Health 1999
  - "Effect of Hypericum perforatum (S. J. E.) in major depression disorder: a randomized controlled trial." Hypericum Depression Trial Study Group. JAMA : the journal of the American Medical Association 2002
  - "Acute treatment of moderate to severe depression with hypericum extract W5 25/75 (S. J. E.) and paroxetine: randomized controlled trial. What's new in efficacy trial versus placebo." Kasper U et al. 2005
- The dose is 900-1500 mg per day in 2-3 divided doses of an extract standardized to 0.3% hypericin and/or 3-5% hyperforin.

ADHD+Supplements/Herbs
- Omega-3 Fatty acids/Essential fatty acids (EFAs).
  - Important for brain development and function.
  - EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid)
  - Evidence towards low EFAs in ADHD (Burgess 2000)
  - Appears it may help in ADHD developmental coordination disorder, learning disabilities and certain behavioral issues
  - Recent Review out of Yale: Nutritional Supplements for the Treatment of Attention Deficit Hyperactivity Disorder
    - MH Bloch, J Mulqueen; Child Adolesc Psych Clinics of North America 2014

Clear as mud
- Sinn (2009): “Although further research is required, the current evidence supports indications of nutritional and dietary influences on behavior and learning in these children, with the strongest support to date reported for omega-3s and behavioral food reactions.”
- Raz (2009): “Current findings do not support the use of EFA supplements as a primary or supplementary treatment for children with ADHD.”
- What do I do? Recommend DHA and EPA, trying to get 1-2 gms per day in.
- Good recent review
  - The Diet Factor in Attention Deficit/Hyperactivity Disorder Pediatric J. Gordon Millichap and Michelle M. Yee

Botanical Medicine
- Ginkgo and American Ginseng
  - Believed to have a positive effect on memory and learning
  - Lyon's et al: 36 children, up to 17 yo, Ginseng 200mg, Ginkgo 50 mg
  - Over one month 30-74% improvement of social issues, 2 w/ side effects reported.
  - No control/placebo group.

Other Supplements
- Zinc
  - One of the common ones discussed
  - Bilici et al (2004): 400 children randomized, blinded high dose zinc (150 mg) improvement in hyperactivity, impulsiveness and socialization but not inattentiveness.
- Valerian
- Iron:
  - Iron deficiency in ADHD greater than controls (some studies/reviews)
  - Ferritin <30 in 84% ADHD patients
  - When levels low, correlated with worse ADHD scores.
    - Konofal et al Arch Peds Adol Med 2004
    - Follow up study (with placebo)
    - Given iron- better Clinical global impression scale, not in placebo
    - Also Conners better (not stat sig)
    - Konofal et al Peds Neurol 2008
Peppermint oil:
- Carminative - gas relieving
- Menthol - component which acts to relax smooth muscle by blocking calcium channels; most products have 44% menthol
- Also found to have mild topical anesthetic effect
- In children found to be both safe and effective.
  - **Dose:** 0.2-0.4 ml per day
  - **Forms:** enteric coated, peppermint oil soft gels, oil

Randomized, double-blind, controlled 2-week trial:
- 50 children; dose 1-2, 187 mg peppermint oil 3X/day for 2 weeks
- 76% receiving enteric coated peppermint oil caps with decrease in sx
- 19% decrease in placebo group


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Ginger (Zingiber officinale):
- Root of ginger plant chewed to alleviate nausea - ancient times in India - proverb saying that all good is found in ginger
- Most often used in patients with nausea, dyspepsia, motion sickness
- Prokinetic action mediated by spasmolytic activity upon Ca++ channels
- Proven effectiveness in reducing postoperative nausea and emesis
- Can cause mild abdominal pain in some patients
  - **Dosing:** 250mg to 1.0 gram; max adult dose of 5 gm per day
  - Ginger is available as a dried or fresh root, tea, powder form, liquid extract, tincture, tablets, capsules, and candied form

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Probiotics:
- Ecosystem of gut may differ at times of illness and health
- Anti-inflammatory effect of probiotics
- Barrier effect with alteration of mucus layer
- Treatment: traveler’s diarrhea and viral gastroenteritis
- Lactobacillus and Bifidobacterium studied most often
- Forms: powder, yogurt, capsules, chewable tablets, freeze-dried powders, wafers and beverages.

Lactobacillus rhamnosus GG (LGG)
- Randomized, double-blind, placebo-controlled trial receiving either LGG or placebo for 8 weeks; 141 children
- Outcome: overall pain at end of intervention period
- LGG - significant reduction of frequency and severity of abdominal pain: p<.02 and .001 respectively
- Week 12: treatment success: 48 children LGG vs. 37 placebo: p<.03

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Colic
- Two good reviews
  - Rosen et al Pedi in review 2009
  - Rosen: Explore July 2007
- Fennel seed oil
  - 125 colicky babies, placebo controlled
  - 65% improvement in treatment group vs 24% control
- Botanical blends
  - Fennel, chamomile, vervain, licorice, lemon balm
  - Large volume (3 oz/day).
  - 57% improved crying vs placebo 20%
  - Fennel, chamomile, lemon balm, rosemarinic acid, b vit
  - Crying decreased by 88% in treatment group, stat sig vs placebo
  - 200-76 min per day

- Probiotics
  - 2009 L. Reuteri 100 mill CFUS
  - Compared to simethicone
    - Improvement in one week, increased over 4 weeks, 200 min/d >159 min/d
    - 95% response vs 7% in simethicone group
  - 2010 repeated with placebo only
    - Again stat significant in probiotic group