Adolescent Psychiatry and Integrative and Alternative Medicine: Best Practices
What Works and for Whom?

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DISCLAIMER:

DR. BERNSTEIN
Learning objectives

Participants will show greater understanding and be able to identify:

1. Harmful drug-drug interactions between conventional medications, nutraceutical and herbal preparations and apply this knowledge to their clinical practice through case examples and group discussion.

2. Which herbal preparations are more efficacious than others and in which clinical situations when used adjunctively to treat medication side effects?

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Learning objectives

3. Differences with respect to side effect profile, potential risks, formulation, modification and benefits specific to youth in the use of botanical and nutraceutical supplements.

4. Healing the healer- how to find the time to put into practice for you and those you help integrative practices such as Qigong, Mindfulness Based Meditation, Yoga etc.

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Case Study:

15 yrs old male BMI 30 has difficulty maintaining focus during the day and his grades have dropped, he reports that he can’t get to sleep until 2 am, he reports feeling sad and depressed in the evening and that he has a lot of gas and reflux-like symptoms, he is tired all day, drinks milk and cookies daily right after he gets home from school and also sometimes in the evenings after dinner which usually consists of pizza.

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CAM - Complementary and Alternative Medicine – old
CIME Complementary and Integrative Medicine – new term

Inclusive
Diverse
Holistic
Person Centered

Kemper et al., (2008)

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Safety? Efficacy?

Public perception that “natural” is better?! If not ingested or injected - it is safer?

Medical –Legal Liability?

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Some FDA-designated GRAS (Generally Recognized as Safe) are

Caffeine and Aspirin

Two substances used for years without the need for a prescription.
Potential lethality in large amounts.

Rodriguez RS, Haugen R, Rueber A Huang CC.(2014)
Reversible neuronal and muscular toxicity of caffeine in developing vertebrates.
MANY TYPES OF CIMED
Meditation and Related Approaches
Biofeedback
Supplements
Diets
Ethnomedicine
Spiritual practices
Social medicine
Manual/Mechanical
Energy/Electromagnetic Therapies
Animal Assisted Therapies
Creative Arts Therapies

Kemper et al., (2008)

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MANY APPROACHES

http://mediaeye.co.in/Headline/Music_therapy_reduces_depression_in_kids,_adolescents/10865
Meditation and Self Care

First published study on meditation by Dr. Benson: in 1971, "A wakeful hypometabolic physiologic state"

Black et al (2009)
Kelly (2007), Kemper (2008)
Meditation
Meditation and Self Care
http://www.amsa.org/healingthehealer/meditate.cfm
Herbert Benson, MD “How to elicit the relaxation response”
http://www.relaxationresponse.org/steps/

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YOGA
Decreases:
Aggression
Disruptive behavior
Fights

How? Stay for Dr. Basant Pradhan’s talk TODAY

Evidence: Yoga at school
Williamson LA (2012)

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CIMED to Reduce side effects of Conventional meds (headache)

Acupuncture
Oxygen therapy

Sun-Edelstein et al. (2011)
Taylor (2011)
Zhou (2011)
Richardson (2003)

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Prevention of TARDIVE DYSKINESIA
Branched Chain Amino Acids
Efficacy not proven but need more study

Mechanism of action - Phenylketonuria impairs the kinetics of phenylalanine which is in many foods - men with this disorder have higher risk of tardive dyskinesia

Older Very Small study of 36 adult males but was a PCT Treated with Antipsychotics
Improved after a protein meal with 19.6% branched chain amino acids ratio of valine to isoleucine to leucine of 3:3:4

Richardson (2003)
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Prevention of TARDIVE DYSKINESIA

Vitamin E 300 to 800 U per day dose range

Soares-Weiser, Maayan and McGrath (2011)

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Neurofeedback

EEG may also be useful to exclude seizures Helpful for ADHD.

Kerson (2013)
Simkin (2014)

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FOOD

DIETS

SUPPLEMENTS
AYURVEDA

Kapha – solid substratum of the body including immune function
Pitta – digestive and metabolic function
Vata – energetic and neural activities

Singh HK (2013)
SPECIAL DIETS
Casein Free
Gluten Free Diets/Celiac
FODMOPS (indigestible fructooligosaccharides)
Elimination of Artificial Colors or Flavors
Low Carbohydrate
Restricted Calorie
High Protein

Pelsser (2011)

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SUPPLEMENTS
REGULATION?
The Dietary Supplements Health and Education Act of 1994 (DSHEA)

A product other than tobacco
intended to supplement the diet.
Not used as a conventional food
Not the sole item of a meal or diet
Labeled as a dietary supplement

Kemper (2008)

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SUPPLEMENTS

Vitamin, Mineral, Herb, Botanical, Amino acid

Intended for ingestion
pill, capsule, tablet or liquid form

Kemper (2008)

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SUPPLEMENTS/HERBALS:
No safety data yet in pregnancy

Feucht and Patel (2011)
Nierenberg et al. (1999)

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RISKS

Interaction with CYP 450 enzyme inducer or antagonist

Prescription medications are metabolized by the same CYP 450 enzyme system i.e., warfarin, coumadin, antibiotics, oral contraceptives, carbamazepine, SSRI.

GRAPEFRUIT JUICE CAN MAKE ORAL CONTRACEPTIVES INEFFECTIVE!!

Kemper et al., (2008)

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WHAT IS THE EVIDENCE?

FOR WHOM?

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BEST EVIDENCE FOR OMEGA-3

AS ADJUNCTIVE MOOD STABILIZER

POTENTIAL TO REDUCE AGGRESSION

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WHAT IS OMEGA-3?

OMEGA 3 = ALA, EPA, DHA polyunsaturated fat found in food
EPA = eicosapentaenoic acid
DHA = docosahexaenoic acid


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WHERE IS OMEGA-3?

SEAFOOD,
flaxseed oil (which provides ALA).
Algae oils are a vegetarian source of DHA


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WHY and HOW OMEGA-3?

FISH DERIVED MORE EFFECTIVE

May work better if given with INOSITOL

Unpublished study in progress at Mass General/Dr. Janet Wozniak
BEST EVIDENCE FOR OMEGA-3

Many many studies…

Amminger et al (2014)
Amminger et al (2014)
Bloch and Hannestad (2012)
McNamara et al (2014)
Gracious et al (2010)
Su et al (2014)

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BEST EVIDENCE FOR OMEGA-3

EVEN LOW DOSE HELPFUL

less antisocial and aggressive behaviors

Sarris et al (2011)

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MELATONIN:

FDA approved in the USA for adult use:
circadian rhythm sleep disorders in blind persons
May increase binding of GABA
NOT a sedative…

Ferracioli-Oda et al (2013)
Levy and Hyman (2008)

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Melatonin Concerns:
Can lower seizure threshold
Impact on the onset of puberty
Drug-melatonin interaction – SSRI
Sertraline, Fluvoxamine, Citalopram (CYP1A2 and CYP 2C19)
Close monitoring if given with SSRI and other compounds metabolized by CYP450

TRYPTOPHAN EFFICACY:
Depression and Insomnia
Better than placebo and comparable to Tricyclics in European studies.

Mischoulon (2009)

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TRYPTOPHAN = 5-HT(5-Hydroxytryptophan)
The body converts tryptophan to 5-HTP

Source: seeds of an African plant, Griffonia Simplicifolia. warm milk

Kemper (2008)
TRYPTOPHAN
Dose: 150-900 mg per day

POTENTIAL FOR SEROTONIN SYNDROME
IF GIVEN WITH SSRI, St. JOHNS WORT ETC

Slight risk of lowering seizure threshold

Kemper (2008)
SAMe for Depression and Cognition

SAM-E (S-adenosyl methionine)

SAMe = precursor to Acetylcholine
required to maintain Choline levels
made from the amino acid l-methionine metabolic pathway
involving folate and B12

DON’T SUPPLEMENT IN MANIA
Mania is associated with increased enzymatic activity methionine
adenosine transfrase.

Mischoulon (2009), Lebkovitz et al (2012)

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SAM-E (S-adenosyl methionine) EFFICACY FOR DEPRESSION

expensive about $1 for 400 mgs tablet

Mischoulon (2009)

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B VITAMINS AND MOOD

Natural sources of B vitamins:
lentil, wheat germ, avocado, split pea, sweet potato, chicken,
green (spinach, turnip greens) leafy vegetables, garbanzo bean,
chicken, turkey, pork, tuna, salmon, almond.

Naylor et al (1987)
Levy and Hyman (2008)
BEST EVIDENCE:
PREVENTION OF ARND/FASD

Prenatal supplementation with Choline, Folate, DHA, Vitamin A, Vitamin E, Zinc, Selenium, B6, B12 may protect against Fetal Alcohol Spectrum Disorder due to preventing alcohol induced disruption of the functions of L1 cell adhesion molecule (L1).

(Young, Giesbrecht, Eskin, Aliani, Suh, 2014)

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LOW LEVEL OF FOLATE ➔

Increased risk of DEPRESSION

Potential Risk of Mania with Excessive Folate (leafy green vegetables, oranges)
Vitamin C to treat excessive levels of Vanadium —risk of diarrhea

Naylor et al (1987)
Levy and Hyman (2008)
INOSITOL:
Mood Stabilizer and as Antidepressant
Dosage range 2 to 12 g/day

Mass Gen/ Dr. Janet Wozniak (study in progress-2015)
Lewis et al. (2013)
Levkovitz et al. (2012)

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St. John’s Wort – Hypericum
Extract of the flower of St. John’s Wort
Doesn’t cross the BBB
Active agent - hypericin or hyperforin
Many drug-drug interactions - CYP-450-3A4

Can decrease drug activity of:
- warfarin, cyclosporin, oral contraceptives,
- theophylline, digoxin,
- indinavir and irinotecan

Feucht and Patel (2011)
Nierenberg et al. (1999)

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IMPROVE COGNITION

BENEFITS WITH UNKNOWN RISKS:
Amino Acid-L-Theanine 400 mg/d (not in regular tea)
Found in Tea Plant
May be neuroprotective and mood enhancing

Ritsner et al (2011)

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ADAPTOGENS
GINSENG ROOT
Be Careful: MANY INTERACTIONS WITH OTHER COMPOUNDS

BACOPA
(Withania somnifera, Bacopa monniera
Bacosides-enriched standardized extract of bacopa)

Singh HK (2013)
Coon and Ernst (2002)

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RISKS...OUTWEIGH BENEFITS....

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SUPPLEMENT CONCERNS: IMPURITY OR CONTAMINATION DURING MANUFACTURE

(ex: “Purity Healthy Life Chemistry B-50 lot numbers F03Q and C02R” contaminated with methasterone and dimethazine, “Purity Multi-Mineral and Vitamin C lot number 12-829 and E03Q” contaminated with dimethyltestosterone)

http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsForHumanMedicalProducts/ucm362800.htm

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SUPPLEMENT CONCERNS: CONTAMINATION

Heavy Metal Contamination and PCB – Lead, Vanadium, Mercury just about anything even jewelry

Especially problematic for Herbs (Gingko, Feverfew, Ginger Root, Ginseng) but also for Omega 3 (fish oil) taken in concentrated capsule form

Efferth and Kaina (2011)

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RISK OF BACTERIAL CONTAMINATION ESPECIALLY WITH

Chamomile Tea – *Clostridium botulinum* from soil

Bianco (2008)

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THE Compound Itself is UNSAFE- example: 
Ephedra (Chinese ma huang, Ephedra sinica) 
Sarsaparilla Root-(S. ornata and S. Glabra )Jamaica “Wild Licorice, Black Creeper” dust ➔ asthma, kidney failure 
Gingko Biloba -Significant risk of brain bleeding 
Chinese Herbs –potential to cause Fanconi’s syndrome, interstitial figrosis and renal failure due to toxic effects of aristolochic acid 
DHEA 
D-Carnitine-muscle weakness 
Kava Kava – LIVER FAILURE especially with Caffeine: decreased/increased BP 
Kava Kava with Valerian and Chamomile can cause CNS depression, decreased BP and increased HR 
2-Dimethyl L-Aminoethanol (DMAE) - worsening depression, psychosis, seizure disorders 

Drug-Supplement Interactions

**Haloperidol and Valerian**
- Increased Sedative Effect
- May increase risk of TD

**St. John’s Wort and SSRI:**
- Serotonin Syndrome

**5-HT (Tryptophan) and SSRI:**
- Serotonin Syndrome

Della Corte et al. (2008)

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ADDITIVE SEDATION
Valerian – May also help anxiety but increased sedation with other medications
i.e., Benadryl, Benzodiazepines, Depakote, Ramelteon

Bogahapu et al. (2008)

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Bleeding-Nosebleeds, Increased Menstrual Flow-> Anemia

CYP450 system
Aspirin, NSAIDS, Coumadin/Warfarin, cyclosporin, oral contraceptives, theophylline, phenprocoumon, digoxin, indinavir, irinotecan – decreased efficacy or increased risk of bleeding

WITH:
Gingko Biloba
Ginseng
Fish Oil (Omega 3)

Higher risk with higher dose of Fish Oil >1-2 g
BENEFIT DOES NOT OUTWEIGH RISK - NOT RECOMMENDED

Antibiotics, Antifungal agents and Immune therapies:
Not proven effective
Allergic reactions
Altered immune function
Chelation

Levy and Hyman (2008)

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