Natural Medicines: Helpful? Or Harmful?

Researching the Literature on Herbs and Dietary Supplements

Julie Whelan, Countway Library
Objectives

• Reasons to be interested in this topic
• Brief review of the most frequently used products
• Recommended sources for evidence-based information on herbs and dietary supplements.
• Search tips
• Safety concerns
• Create awareness of workshop
Why do we care?

• Herb and supplement use is growing
• Increasing knowledge of interactions, adverse reactions and toxicities
• JCAHO Medication Management standard
  – Herbs and supplements part of history and physical
  – Clinical implications must be recorded in medical record
• In some places natural products are only medications available
• Source for new drug discovery!
Fourteen days of consuming dark chocolate (100 g/d containing 500 mg polyphenols) reduced systolic and diastolic blood pressure, compared to white chocolate (100 g/d containing no polyphenols), in a randomized, crossover study of 13 adults recently diagnosed with stage 1 mild isolated systolic hypertension. Blood pressure returned to pre-study levels after dark chocolate was discontinued. Heart rate was unaffected by dark or white chocolate.

The Minuses....

- Forty-two percent of respondents tried complementary and alternative medicine (CAM) therapies, including herb and non-herb supplements, for seizures in a survey of 379 patients with epilepsy in Arizona. Garlic, ginkgo, soy, melatonin and kava were the most commonly used supplements. 19/44 respondents reported an increase in seizures while using herbs. Of 46 health care professionals who also participated in the study, all reported an unawareness of at least three of the dietary supplements listed on the survey.

Who uses supplements?

- 44% males, 53% females in 2003-2006 NHANES survey

Over 50% of respondents used dietary supplements

- 17.7% - nonvitamin, nonmineral, natural products in last 12 months 2007
  - Barnes CDC National Health Statistics Report #12 Dec. 2008

- 20% of 2982 NC adults, 5% gave to children
Who uses supplements?

• 27% of adolescents in a national survey
  • Gardiner P. et al BMC Complement Altern Med 2008 Mar 31;8:9

• 45% of pediatric patients presenting to an ED
  • Lanksi SL, et al Pediatrics 2003 May;111(5 Pt 1):981

• 64-81% of cancer survivors use mineral/vitamin

• Nearly 1 in 5 people in US use an herb -more 50% did not disclose this to a conventional medical professional.

• *Patients with chronic conditions* (*Classic paper*)
  • Astin J JAMA 1998 May 20;279(19):1548
Reasons of Cultural Competence
Herb Usage Among Racial/Ethnic Minorities U.S.

Systematic Review on prevalence

• Data from 108 studies found the prevalence:
  – African Americans 17 % (range 1-46 %)
  – Hispanics, 30 % (4-100 %)
  – Asians, 30 % (2-73 %)

Top Ten
Frequencies and age-adjusted %s of adults 18+ who used selected types of nonvitamin, nonmineral, natural products (2007 NHIS)

- Fish oil or omega 3 or DHA.........................10,923  37.4 (1.13)
- Glucosamine .............................................. 6,132  19.9 (0.91)
- Echinacea .............................................. 4,848  19.8 (1.01)
- Flaxseed oil or pills ....................................... 4,416  15.9 (0.87)
- Ginseng ................................................ 3,345  14.1 (0.87)
- Combination herb pill....................................... 3,446  13.0 (0.83)
- Ginkgo biloba ............................................ 2,977  11.3 (0.88)
- Chondroitin .............................................. 3,390  11.2 (0.82)
- Garlic supplements ........................................ 3,278  11.0 (0.66)
- Coenzyme Q10........................................... 2,691  8.7 (0.60)
- Fiber or psyllium ......................................... 1,791  6.6 (0.61)
- Green tea pills ............................................ 1,528  6.3 (0.65)
- Cranberry (pills, gelcaps) ................................ 1,560  6.0 (0.63)
- Saw palmetto ............................................. 1,682  5.1 (0.46)
- Soy supplements or isoflavones ............................. 1,363  5.0 (0.53)
- Melatonin ............................................... 1,296  4.6 (0.48)
- Grape seed extract ........................................ 1,214  4.3 (0.43) etc.
# Herbals Food/Drug Market 2012

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Latin Name</th>
<th>$2012 Sales</th>
<th>% change 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cranberry</td>
<td>Vaccinium macrocarpon</td>
<td>65,483,940</td>
<td>-5.88</td>
</tr>
<tr>
<td>2. Garlic</td>
<td>Allium sativum</td>
<td>39,950,540</td>
<td>11.78</td>
</tr>
<tr>
<td>3. Saw Palmetto</td>
<td>Serenoa repens</td>
<td>31,775,810</td>
<td>-3.00</td>
</tr>
<tr>
<td>4. Soy</td>
<td>Ginkgo biloba</td>
<td>25,833,420</td>
<td>-1.09</td>
</tr>
<tr>
<td>5. Ginkgo</td>
<td>Ginkgo biloba</td>
<td>25,833,420</td>
<td>-1.09</td>
</tr>
<tr>
<td>6. Milk Thistle</td>
<td>Silybum marianum</td>
<td>21,143,560</td>
<td>7.25</td>
</tr>
<tr>
<td>7. Black Cohosh</td>
<td>Actaea racemosa</td>
<td>16,925,990</td>
<td>-21.33</td>
</tr>
<tr>
<td>8. Echinacea</td>
<td>Echinacea spp.</td>
<td>15,8980,880</td>
<td>-6.08</td>
</tr>
<tr>
<td>9. St. John’s wort</td>
<td>Hypericum perforatum</td>
<td>12,193,790</td>
<td>-3.39</td>
</tr>
<tr>
<td>10. Ginseng</td>
<td>Panax ginseng</td>
<td>11,136,960</td>
<td>-8.73</td>
</tr>
</tbody>
</table>

Total U.S. Sales $5.59M

From Herbalgram. 2013;99:60-64
Mix ‘n Match
Online Resources

- Natural Medicines Comprehensive Database
Natural Medicines

• Indexes by brand name-25,000+ names
• Creation of drug/herb/-supplement profile for interactions
• Links from Clinical Pharmacology
• Effectiveness Checker – includes allopathic and CAM therapies
• Rates the evidence and links out to PubMed citations
• Natural Medicines Watch – adverse event reporting
Natural Medicines
Patient Entry in Medline Plus!

Spanish versions available
Free for all!
Rates the evidence
About herbs, botanicals...
Even More Sources

Complementary and Alternative Medicines

Texts & Tools | Drugs | EBM | CAM | Genetics | Images | Patient Education

General Information

Boston Healing Landscape Project - Information on traditional and cultural healing practices in the Boston area. Includes an herbal index.

Creighton University Medical Center Complementary and Alternative Medicine - original essays written by faculty and medical students

Osher Institute - Harvard Medical School

Looking for Evidence in Natural and Complementary Medicine - a guide for healthcare professionals

NCCAM-Natl Center for Complementary & Alternative Medicine
Databases of Primary Literature

• Medline/PubMed

• Search botanical name, common name(s), names of known constituents

• Request a handout on Medline/PubMed search tips

• Alt HealthWatch - Limit to scholarly journals
EMBASE

- Use the EMTREE thesaurus
- Add synonyms - internal dictionary aid
- Search herb and herb extract
- Click to include all years

- Look for activity as well as drug class
  - Antifungal agent OR antifungal activity
- Make the term a Major term to avoid catalog studies
<table>
<thead>
<tr>
<th></th>
<th>PubMed</th>
<th>EMBASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk thistle</td>
<td>176</td>
<td>“milk thistle” 320</td>
</tr>
<tr>
<td>Silybum marianum</td>
<td>175</td>
<td>Silybum marianum 233</td>
</tr>
<tr>
<td>Silymarin</td>
<td>673</td>
<td>Silybum marianum extract 222</td>
</tr>
<tr>
<td>(limit English)</td>
<td></td>
<td>Silymarin 1,459</td>
</tr>
<tr>
<td>(limit English)</td>
<td></td>
<td>(limit English)</td>
</tr>
<tr>
<td>Total</td>
<td>747</td>
<td>Total 1,161</td>
</tr>
</tbody>
</table>

Kline RM, Kline JJ, Di Palma J, Barbero GJ.

University of Missouri-Columbia, Department of Child Health, Division of Pediatric Gastroenterology, Columbia, Missouri, USA.

In a randomized, double-blind controlled trial, 42 children with irritable bowel syndrome (IBS) were given pH-dependent, enteric-coated peppermint oil capsules or placebo. After 2 weeks, 75% of those receiving peppermint oil had reduced severity of pain associated with IBS. Peppermint oil may be used as a therapeutic agent during the symptomatic phase of IBS.
Evidence Based Medicine

Peppermint oil for irritable bowel syndrome: a critical review and metaanalysis (Structured abstract) Database of Abstracts of Reviews of Effects 2006 Issue 3

Deadly combinations

Autopsy cites ephedrine, liver problem, hypertension

FORT LAUDERDALE, Fla. (AP) --
A weight-loss drug containing a
stimulant probably contributed to the
heatstroke death of Baltimore Orioles
pitching prospect Steve Bechler, a
coronor said Tuesday.

Bechler had been taking an
over-the-counter supplement that
contained ephedrine, which has been
linked to heatstroke and heart trouble,
Broward County medical examiner
Dr. Joshua Perper said.

Ephedrine has been banned by the NCAA, the NFL and the International
Olympic Committee, but not by major league baseball.
Issues of Adulteration
Poisoning from a dietary supplement administered during hospitalization.

Boyer EW, Kearney S, Shannon MW, Quang L, Woolf A, Kemper K.

Department of Emergency Medicine, University of Massachusetts, Worcester, Massachusetts 01655, USA. edward.boyer@tch.harvard.edu

Increasing numbers of persons use dietary supplements (DS). Patients who believe in the effectiveness of DS may continue to take them on admission to a health care facility. We present the case of a child who received a DS on a daily basis as an outpatient, continued its use after admission to the hospital, and became poisoned by it during his hospitalization.

PMID: 11875177 [PubMed - indexed for MEDLINE]
The problem

Parade Magazine: 8/3/03
Manufacturing Issues

- Standardization
- Potency
- Contamination
- Freshness and quality of herbal ingredients
- Packaging
- Dosage form
Quality and Safety Issues

- FDA web page
  - http://www.fda.gov/Food/DietarySupplements/Alerts/default.htm
- Natural Medicines
  - safety rating
- ConsumerLab database -- $$
What You Can Advise…

• Herbs rated by Consumer Labs
• Products manufactured in Germany
• Products used in clinical trials
Questions? 432-2632 or julia_whelan@hms.harvard.edu