Management of Drug-Drug and Drug-Herb Interactions in Asthma and Allergy

Mona Tsoukleris, PharmD, MS
Associate Professor, retired
Department of Pharmacy Practice & Science
July 19, 2018

Disclosures

I have no financial or other disclosures
Learning Objectives

At the end of this presentation, participants will be able to:

• Describe types of drug interactions encountered in practice
• Explain mechanisms for drug/herb/disease interactions
• Identify common drug-drug, drug-herb, herb-disease, and drug-disease interactions encountered in asthma and allergy

Background

• Currently available high quality evidence supporting effectiveness of CAM in asthma is limited
• CAM use is prevalent, especially in poorly controlled asthma
• Atopy is prevalent in asthma
• Inhaled corticosteroid use inappropriately low in many asthma populations
• CAM use may reflect fear/distrust of traditional medical approaches

Source:


NIH - National Center for Complementary and Integrative Health

29.4\% reported CAM use. Over 12 months, NON-CAM users vs. CAM users filled:

- Rescue-only medications (11.0\% vs. 26.4\%, \(p<0.025\))
- ANY controller Rx (>1 fill: 78.6\% vs. 61.8\%, \(p<0.05\))
- ANY inhaled steroid Rx (>1 fill: 75.6\% vs. 46.5\%, \(p<0.05\))
- ICS Rx filled: 3.5 vs. 1.1 canisters (\(p=0.072\))

ASK about non-traditional therapy during medication hx
Keep an OPEN and non-judgmental attitude

Herbals & Dietary Supplements
Fundamental Concepts

- No required standards for purity, potency but requirements DO exist for labeling
  - Contamination
  - Adulteration
  - Batch to batch variation
- Natural products are complex
  - >1 constituent, often more
  - Active component(s) may be unknown
  - Multiple constituents may be required for effect
Asthma Support
From Circle of Health

Ingredients

- Elecampane root 4:1 extract (inula helenium)
- Mullein 4:1 herbal extract (verbascum thapsus)
- Licorice 6:1 extract (glycyrrhiza glabra)
- Amalaki fruit 5:1 herbal extract (emblica officinalis)
- Shilajit (natural asphaltum-mineral pitch, 25% vulvic acids)
- Tulasi 7:1 extract (ocimum sanctum)
- Haritaki fruit 4:1 herbal extract (chebulic myrobalan)
- Pippali 4:1 extract (piper longum)
- Bhibitaki 4:1 extract (beleric myrobalan)
- Manna (vamsha rochana)
- Thyme leaf (thymus vulgaris)
- Black Pepper (piper nigrum)
- Ajwan (apium graveolens)
- Ginger root (zingiber officinale)
- Cardamom seed (elettaria cardamomum)
- Turmeric root (curcuma longa)
- Myrrh (commiphora molmol)
- Cubeb berry (piper cubeba)
- Clove (caryophyllus aromaticus).

Other Ingredients: Base of Honey, Rice Syrup, Ghee.

https://naturalmedicines-therapeuticresearch-com

Types of Interactions

Pharmacokinetic:

- Absorption
- Distribution
- Metabolism
- Excretion

Pharmacodynamic

Drug-Drug, Drug-Herb, Herb-Herb, Drug-Disease, Herb-Disease

https://publications.nigms.nih.gov/medbydesign/chapter1.html
See also: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2808967/

http://medicine.iupui.edu/clinpharm/ddis/main-table/
Pharmacodynamic Interactions

- Aspirin/NSAID
- Beta-blockers
- ACE cough

Systemic Steroids:
- Diabetes
- Hypertension
- Congestive Heart Failure

Herbs Studied for Asthma/Allergy/Respiratory

- Angelica
- Chamomile
- Echinacea
- Ephedra
- Garlic
- Ginkgo

- Ginseng
- Grape seed extract
- Licorice root
- Kava kava
- Peppermint oil/leaf
- St. John’s Wort
- Stinging nettle

Bielory et al Annals of Allergy, Asthma & Immunology 2004;93:545-54
**High**: Do not use combination; contraindicated; strongly discourage patients from using this combination, serious adverse outcomes can occur.

**Moderate**: Use cautiously or avoid combination; warn patients that significant interaction or adverse outcome could occur

**Mild**: Be aware that there is a chance of an interaction; advise patients too watch for warning signs of a potential interaction

https://naturalmedicines.therapeuticresearch.com/
Drug Interactions

Beta-agonists & Decongestants – Caffeine, sympathomimetics, tricyclic anti-depressants (major), potassium depleting drugs

Oral Corticosteroids – Diabetes, CHF, hypertension, potassium depletion, Cushing effects (azole antifungals, grapefruit juice)

Inhaled & Nasal Corticosteroids – Desmopressin, 3A4 ICS with HIV medications (e.g., ritonavir, atazanavir, boceprevir, darunavir, dasabuvir, indinavir, nelfinavir, ritonavir, saquinavir, telaprevir, tipranavir), azole antifungals

Herb Interactions

Garlic – reduced absorption (INH), antiplatelet (warfarin/NSAID), hypoglycemia, hypotension

Ginkgo – reduced absorption (alprazolam), increases theophylline clearance, inhibit platelet aggregation (warfarin), ginkgotoxin (seizures), increased serotonin reuptake (SSRIs), increased blood glucose in treated DM

St. Johns Wort – Induces 1A2/2C9/3A4 (oral contraceptives), 3A4 (alprazolam), multiple drugs

Stinging Nettle - hypoglycemia, hypotension, CNS depression, incr. Li levels, high Vit K content (warfarin)
More Herb Interactions

**Chamomile** – CNS depressant, estrogen receptor competition (oral contraceptives), inhibit 2C9 (NSAIDs, warfarin), inhibit 2D6 (multiple drugs)

**Echinacea** - inhibit 1A2 (APAP, caffeine, TCADs), induce/inhibit 3A4 (depending on drug and intestinal vs. hepatic)

**Ephedra** – caffeine/theophylline (MI, stroke), incr. QT

**Kava kava** CNS depressant, inhibits 1A2 (conflicting data), inhibit 2C19 (multiple drugs), inhibit 2C9 (multiple drugs)
Management Options

• **Inquire**: health beliefs, what’s being used/considered
• **Investigate**: What are potential problems, interactions, data supporting/refuting use
• **Manage** – based on available data and severity
• **Mitigate** – minimize harm when patient insists on use
• **Monitor** – even when data suggest no interaction. LISTEN to your patients
**Additional Considerations**

- Ask about products used for asthma and other conditions
- Dietary alterations can interact with medications (e.g., fat, protein, grapefruit juice)
- Impact of health beliefs on adherence to “traditional” medical approaches
- Patients with asthma often have predisposition to allergy and may react to herbs (e.g., ragweed allergy)
- Patients with asthma often on multiple drugs, especially as they age

**Take Home Points**

- Include herbs, teas, dietary changes, and complementary and integrative medicine use in your medication history
- Be sure your patients understand that you can help them use these products more safely but acknowledge lack of data mandates closer monitoring
- Look up interactions using reliable sources
- Check for quality of the herbals your patients use and what you recommend
Questions ?