

## 1 **Are You Missing Mold Illness?**

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## 2 **Fight**

- Are You Missing Mold Illness In Your Patients?
- Dr. Jill Crista

## 3 **Fight**

- Fighting Spirit
- Systemic Antifungals
- Herb-Rx Combinations
- Intranasal Antifungals
- Essential Oils & Hydrosols
- Ozone
- Intranasal Biofilm
- Topical Antifungals
- Pregnancy & Ped's

## 4 **Fighting Spirit**

## 5 **Energetics of the Moldie**

- Conquer mold first on the inside
- Energetic trend - unsafe/involuting

- Fill with light
- Guide mold to compost pile
- Thank and release it

## 6 **First 3 Rules of Toxic Exposure**

## 7 **Systemic Antifungals**

## 8 **Peel The Orange**

- 1 AVOIDANCE
- 2 FUNDAMENTALS
- 3 PROTECT
- 4 REPAIR
- 5 FIGHT

## 9 **Systemic + Intranasal Antifungals**

- Reduces recalcitrance
- Reduces drug resistance
- Systemic treatment factors ~
  - Health status of patient
  - Infection vs colonization
  - Location
- Botanical medicines can offer effective but less harmful systemic treatment options
- BUT don't be afraid to combine

## 10 **Yeast vs Mold**

- Do antifungal tx's work for mold?
- Fungal burden
- Many/most ~ yeast biofilm
- ↑mycotoxin production

## 11 **Botanical Antifungals - Holy Basil**

- Ocimum sanctum/basilicum
- Ayurvedic - Tulsi, taken traditionally as tea
- Antifungal, antibiotic, antioxidant, antiparasitic

- Affinity for lungs & mind\*
- Signif inhibited cell adhesion/invasion
- Shown to detox aflatoxin
- Signif inhibited activities of MMP-9
- Action against fluconazole resistance
- Dose ~  
Tea: 4 cups daily  
Steep covered to retain e.o.'s  
Extract: 550mg leaf extract qd-bid
- PMID: 20233602, 27471501, 20161958, 27274752

## 12 **Botanical Antifungals - Pau D'Arco**

- Hydroanthus impetiginous/Tabebuia spp
- Central/S. America forest tree known as lapacho
- Taheebo tea - traditional tea from inner bark
- Antifungal ~ MICs similar to those of amphotericin B
- Antimicrobial ~ activity against MRSA
- Immunomodulator, antitumor, adaptogen
- Expectorant to deeply embedded mucous & contaminants
- Not cytotoxic to normal cells at concentrations that were active against fungi and bacteria
- Dose ~  
Tea: 2-4 cups, simmer 10 min  
Capsule: 1gm qd-bid  
Tincture: 1 tsp bid-qid
- \*Avoid during pregnancy
- PMID: 9517956, 23778660, 16553949

## 13 **Botanical Antifungals - Thyme**

- Thymus vulgaris
- Reliable broad-spectrum antifungal, antibacterial
- Down-reg effect on growth, gene expr in Fusarium

- Action against fluconazole resistance  
(*A. fumigatus*, *Trichophyton rubrum*/athlete's foot, *Candida* spp)  
Effective against both the macro and arthroconidia growth (MIC 72 µg/mL) in fluconazole-resistant fungi  
>80% reduction in elastase activity
- Inhibitory effects on Aflatoxin prod found at lower doses than required for antifungal activity
- High safety profile - nontoxic even up to concentration 2x higher than their respective MFCs
- Dose ~  
Capsule (oil extract) - up to 50mg bid  
Tincture - 1/4-1/2 tsp bid-tid  
Essential oil - 10 drops in water, per 24 hours
- PMID: 25466118, 28062283, 25242937, 31359292

#### 14 Botanical Antifungals - Garlic

- *Allium sativum*
- Bioactive sulfur-containing compounds (allicin, alliin)
- Antifungal - *Aspergillus* & *Penicillium* species  
Mouse study-Efficacy against *Candida* slightly less than fluconazole (fungal burden reduction, host survival time at 1mg/kg/d)
- Ethanol prep effective against MDR candida (fluconazole, clotrimazole, Amphotericin B, itraconazole, ketoconazole, miconazole, nystatin)
- Antimicrobial - *Staph aureus*, *E coli*, *Pseudomonas*, *Bacillus*
- Antiox, anti-inflam, immunomod, CV protective, anticancer, hepatoprotective, nephroprotective, neuroprotective, GI protective, anti-diabetic, anti-obesity
- Dose ~  
Eat it! Goal 4 cloves daily  
Tincture: 1/8-1/4 tsp bid-tid
- Cautions ~  
Gastritis  
Co-admin with antithrombotics (delays aPTT)
- PMID: 27259073, 31284512, 30345234, 28584446, 30319862

#### 15 Botanical Antifungals - Neem

- *Azadirachta indica*

- Antifungal - Aspergillus spp, Candida, Microsporium
- Antimicrobial, antiviral, antiparasitic (malaria/Babesia)
- Ethanol prep effective against MDR candida (fluconazole, clotrimazole, Amphotericin B, itraconazole, ketoconazole, miconazole, nystatin)
- Antiox, anti-inflam, immunomod, hepato/nephroprotective, neuroprotective, antidiabetic, anticancer, vulnerary
- ↓ Nf-kB, VEGF, c-Myc(oncogene)
- Dose ~  
Capsules: 500mg qd-bid, pulsed  
Tincture: 1tsp qd-bid  
Use whole plant, nimonol extract alone not effective
- Cautions ~  
"Strong" antifungal  
Nontoxic at low doses, poss lymphocyte suppression at high doses (in vitro)
- PMID: 28584446, 27034694, 24031718, 26491309

## 16 Botanical Antifungals - Olive Leaf

- Olea europaea, O. africana
- Oleuropein - biophenol, bitter
- Antifungal, antiviral, antibacterial
- Antifungal ~  
Potency against Aspergillus niger, A. fumigatus  
(MIC: 12.5-25 mg/ml)  
Activity against Candida albicans (MIC of 24 mg/ml, MFC of 48 mg/ml)
- Antiox ~  
Radical scavenging activity >2x that of Green tea
- Anti-inflam, immunomodulatory, anticonvulsant, gastroprotective, cardioprotective, hypocholesterolemic, hypoglycemic
- Antiviral - virucidal effect in dose-dep manner (VHSV, rotavirus) so consider for concom EBV
- Mild activity against Pseudomonas aeruginosa
- Dose ~  
Extract/tincture most effective  
500mg bid-qid

- PMID: 28681004, 28681003, 27383889, 26577343, 25802541, 15869811, 30897691

## 17 Botanical Antifungals - Oil of Oregano

- Origanum vulgare
- Volatile oil extract
- Antifungal - Candida spp, Aspergillus, Penicillium
- Antimycotoxic - Aflatoxin
- Antibiotic - E.Coli, Staph aureus, Enterococcus
- Antioxidant, antiproliferative
- Combine safely w fluconazole & cipro ~
  - ↓drug resistance
  - ↓free-rad formation+S/E
- Dose ~
  - 150mg of 10:1 extract (equiv to 1500mg oregano)
- Cautions ~
  - Dyspepsia (tx's & causes)
- PMID: 27222835, 28176439, 29402621, 29846575, 29987237, 25364204, 25952773

## 18 Botanical Antifungals - Old Man's Beard

- Usnea spp
- Lichen
- Antifungal - Aspergillus, Trichophyton rubrum, Candida spp
- Antibacterial - Staph aureus
- Antiviral, anticancer, antiox, anti-inflam, antithrombosis
- Dose ~
  - Tea: 2 Tbsp C/S in 2-3 c boiled water daily
  - Tincture: 1/2-1 tsp qd-tid, pulsed x 3-5 days

- Cautions ~  
Poss hepatotoxicity if LT use of isolated extracts  
2001-liver tox assoc w LipoKinetix supp  
Usnea blamed  
2008-"At present, a toxicological evaluation of usnic acid is being conducted by the Nat'l Toxicology Program"  
Results still pending? Yet patent pending for CA tx
- PMID: 30676068, 27186821, 29718734, 23713280, 19034791

## 19 Systemic Antifungals - Triazoles

- Fluconazole, Itraconazole, Voriconazole, Posaconazole, Isavuconazole
  - Available oral and IV
  - Tolerated reasonably well but there are AE
  - Documented success with clinical infections (invasive aspergillosis)
- Above courtesy of Dr. Joseph Brewer
- Pros ~  
Favorable safety profiles
- Cons ~  
Spectrum of activity somewhat limited  
Increasing resistance

## 20 Systemic Antifungals

- Fluconazole ~ (Diflucan)  
Fungistatic w dose-dep fungicidal activity  
Candida albicans, Cryptococcus neoformans  
Dose: 100-200mg qd  
200mg Day 1, then 100mg x 14d  
S/E: diarrhea, h/a, QT prolongation  
Cautions: potent inhibitor cytP450
- 
- PMID: 29393017, 16278744

## 21 Systemic Antifungals

- Itraconazole ~ (Sporanox, Onmel, Tolsura)  
Most effective against Aspergillus & resistant Candida strains  
Blastomycosis, pulmonary + extrapulmonary  
Histoplasmosis, incl chronic cavitary pulmonary dz and disseminated, non-meningeal histoplasmosis  
Expensive!  
Dose: 200mg qd-bid x  
Loading dose common 200mg tid  
S/E: diarrhea, h/a, QT prolongation, hepatotoxicity  
Cautions: CI in pregnancy, inhibits cytP450
- PMID: 29393017, 16278744

## 22 Systemic Antifungals

- Voriconazole ~  
Structure related to Fluconazole  
Spectrum of activity comparable to Itraconazole  
Invasive aspergillosis  
Refractory Scedosporium apiospermum & Fusarium spp  
Dose: 200mg q12h, ic  
Duration: min 14d + for at least 7d following resolution of sx  
S/E: N/V, h/a, QT prolongation, hepatotoxicity  
Cautions: inhibits cytP450, many Rx-Rx interactions, CI in pregnancy
- PMID: 19029318

## 23 Systemic Antifungals

- Nystatin ~  
Fungistatic  
Cutaneous/mucocutaneous Candidal infxns  
Not absorbed systemically
- Dose: Oral tablets: 500,000-1,000,000 units every 8 hours until infxn clears+48h
- S/E: N/V, diarrhea, ab pn
- \*Use w caution in pregnancy

## 24 Systemic Antifungals

- Ecchinocandins ~  
Micafungin, Caspofungin
  - IV only
  - Generally well tolerated
  - Documented success with clinical infections
- Above courtesy of Dr. Joseph Brewer
- Amphotericin B ~
  - IV only
  - Fungistatic
  - Tx of progressive and potentially life-threatening fungal infxns
  - High incidence of toxicity

#### 25 **Herb-Rx Antifungal Combos**

#### 26 **Herb-Rx Antifungal Combos**

- Herbs to reduce Rx resistance ~
  - Holy Basil
  - Thyme
  - Garlic
  - Neem
  - Oil of Oregano
- Choose at least 1 of these and combine w other botanical antifungals for best efficacy

#### 27 **How Long To Tx?**

- Until ALL of the following:
  - Nasal treatment is complete
  - Resolution of sx's\*
  - Negative mycotoxins
- Fungi are tenacious!
- Fumes can restart the issue

#### 28 **Herb-Rx Antifungal Combo Example**

- Step 1:  
Thyme tincture ~  
Loading dose x 1 week before Rx  
1 tsp tincture bid
- Step 2:  
Add pulsed Fluconazole ~  
200mg x 3d/wk
- Step 3:  
Add pulsed antifungal botanical on alt days (ie Pau D'Arco)
- Step 4:  
Finish with botanicals x 1 addtnl mo  
Thyme tincture ~ 1 tsp qd  
Pau D'Arco ~ 500mg caps qd-bid

## 29 Intranasal Antifungals

## 30 Sinus Treatment

- 6mo's MINIMUM - diff compliance
- SIG min qd, up to qid
- Treat both nostrils
- Prevent swallowing w positioning
- Rinse mouth with water after use
- Warn epistaxis common, esp when add chelating agent
- Temporarily d/c chelator if severe nasal reactions
- Test mycotoxins at 3mo's. If no ↓ in mycotoxins, change Rx

## 31 Sinus Treatment

- Devices ~
- Hand-held atomizing nasal device
- Nasal ("vertical") sprays
- Neti pots
- Clean device/tip after each use with essential oils to prevent biofilm
- Use 15% H2O2 or blend of essential oils:

- E.O. Sterilizer Solution - 15 drops each of 3-4 e.o. in 1 oz purified water. Spray after each use. Air dry.

### 32 **DIY Sinus Treatments**

- Essential oils\*
- Ozone\*
- NAC\*
- Xylitol
- Probiotics - open cap & snuff
- Manuka honey - 1/16-1/8 tsp per 100mL
- Propolis
- Colloidal silver
- Lauricidin/monolaurin - 10% solution
- Allicin - 8 drops in 100mL
- CYA - mix with sterile water ONLY  
(per pharmacist)
- PMID: 24999540,

### 33 **Intranasal Antifungal Rx Combos**

- Amphotericin B (5mg)/3mL sterile water (NOT saline)
- Levofloxacin(100mg)+Itraconazole(40mg)+Budesonide(0.6mg)/5ml saline
- Ceftriaxone(500mg)+Itraconazole(40mg)+Budesonide(0.6mg)/5ml saline
- Nystatin(50,000IU)/10mL saline bid (per Dr. Brewer-reduced AE)
- Nystatin(50,000IU)+Tobramycin(100mg)/10mL (Klebsiella)
- Tobramycin(100mg)+Fluticasone(3mg)/10mL saline
- \*NOTE: Off-label use of above med's\*

### 34 **Intranasal Multi-Targeted**

- Nasal Spray Application ~  
 0.1% Amphoterecin B  
 0.2% Fluconazole  
 0.2% Mupirocin  
 0.03% Triamcinolone  
 #30mL  
 SIG: 1 nasal instillation each nostril qid  
 \*with permission -  
 Dr. Paul Anderson of ConsultDrAnderson.com\*
- Compounding ~  
 Sterile water, saline  
 Loxasperse powder  
 XyliFos  
 MucoLox (polymer-oral,rectal,vag)

### 35 Essential Oils & Hydrosols

### 36 Essential Oils

- Shown to reduce fungal growth, reduce mycotoxin production, and safe to inhale long-term:
  - Cedar leaf (*Thuja plicata*) - broad spectrum antimicrobial
  - Rosemary leaf (*Rosmarinus officinalis*)
  - Ajwain seed (*Trachyspermum copticum* L.) thyme-anise-oregano
  - Holy Basil leaf (*Ocimum sanctum*, *O. basilicum*)
  - Cumin seed (*Cuminum cyminum* L.)
  - Tea tree (*Maleleuca alternifolia*)
  - Thyme leaf (*Thymus vulgaris*)
  - Black cumin (*Nigella sativa*)
  - Clove (*Syzygium aromaticum*)
  - \*\*Use ONLY inhalation grade\*\*
- PMID: 22408584,18190993, 27275253, 24624154, 27211664, 17209812, 31006459, 15856529, 26042369, 28811611

### 37 Essential Oils - Rx Resistance

- Thyme ~  
Inhibitory effects on Aflatoxin prod found at lower doses than needed for antifungal activity  
Action against fluconazole-resistant fungi and Candida spp
- Ajwain ~  
Caraway, can be used interchangeably with Thyme (recipes)  
Action against fluconazole-resistant fungi
- PMID: 28584446

### 38 Essential Oils - Safety

- Safety ~
- Oregano, Thyme, Clove, Thuja
- Very strong activity against *Chaetomium globosum*, *Penicillium chrysogenum*, *Cladosporium cladosporoides*, *Alternaria alternata*, and *Aspergillus fumigatus*, also *Pseudomonas*
- Effective at full strength & reduced conc
- Genotoxic effect eval on human embryo lung cells showed none of the oils induced significant DNA damage in vitro after 24 h
- \*But they do contain aldehydes
- PMID: 28811611

### 39 Essential Oils - How To

- Titrate ~  
From 1 drop per 1 ounce liquid  
To 25 drops per 1 ounce liquid
- 
- How-To Video ~

### 40 Hydrosols

- Aka aromatic waters, floral waters, distillates
- Water-soluble volatile components
- Vital essence of medicinal plants
- Formed in the distillation process of e.o.
- Safe to use LT, less harsh than e.o.
- More than 50 marketed in Iran

- Persian hydrosols for hyperlipidemia ~  
Thyme, Holy Basil, Artemisia, Garlic, Barberry, Aloe, Dill
- Drink, spritz, nasal spray, bathe
- Caution ~ many mixed w sweeteners
- PMID: 29228785
- 

#### 41 **Ozone**

#### 42 **Intranasal Ozone**

- In-office 'cold corona discharge' ozone generator, fill capped syringe
- Carefully insufflate directly into sinus - DO NOT inhale
- Hold for 20-30 seconds, then blow out through nose
- CAUTION—prevent inhalation into the lungs
- Dose: 2cc of 11 gamma per nostril, can incr by 1cc up to 10cc
- Frequency: 1-2 times/week
- Normal reaction - increased mucous production in 15 min, self-lt

#### 43 **Intranasal Ozone**

- Oil-trap - "safer" method
- Ozone discharged through oil bubbler, 35 gamma through 15 mL olive oil at 125 cc/min
- Nasal cannula - 10 minutes max
- 89% of the irrigated patients recovered faster than conventionally treated controls. Study of 102 chronic purulent frontal sinusitis pts
- Be in a clean space! Co-exposure of airway toxicants with ozone significantly amplifies the damage of those toxicants
- PMID: 12501776, 9163213, 555470, 12773774

#### 44 **Intranasal Biofilm**

#### 45 **Intranasal Biofilm**

- EDTA 15mg/2mLs
- EDTA + Polysorbate 80 (surfactant)

- 2mL of solution (2mL vials)
  - Polysorbate 80
  - Glacial acetic acid
  - Benzalkonium chloride
  - 0.9% sterile sodium chloride
- Xylitol
- Mupirocin (S.aureus)
- NAC (next slide)
- \*Must use something to break up biofilm for complete resolution\*

#### 46 **Intranasal NAC**

- Compounded NAC (N-Acetyl Cysteine)
- 200mg qd-bid
- Similar to the idea of Mucomyst, mucolytic
- Can add 1 drop inhalation-grade mint e.o. to mask sulfur smell
- 
- 
- PMID: 25843257, 23307410, 24799199, 26386189

#### 47 **Treatment Caution**

- Be mindful of Herx "die-off" sxs
- In vitro Aspergillus exposed to amphotericin B increased Gliotoxin production - a possible explanation
- PMID: 15272057

#### 48 **Topical Antifungals**

#### 49 **Topicals**

- Mycotoxins ~
  - Plantain (Plantago lanceolata)
  - Yarrow (Achillea millifolium pannonica\*)
  - Anti-aflatoxin in vitro

- Antifungal ~
  - Clove - oil, oral, analgesic
  - Pau D'Arco - non-irritant dermal application for fungal/MRSA
  - Thyme - oral, intertrigo. Can irritate
  - Coconut - shell extract (MIC>3Rx)
- Artemesinin cream for rashes of undetermined cause
- PMID: 30127827, 23015356, 16553949, 28930122, 22290952

## 50 Pregnancy & Peds

## 51 Pregnancy & Nursing

- AVOIDANCE!!!
- Stability and reduction of myco's vs "win the fight"
- Focus on protective things, esp in 1st trimester
  - DHA
  - Bioflavonoids
  - Fiber
- May use gentle nasal treatments to prevent fungus in the sinuses - esp since sinus congestion so common in pregnancy
  - Eucalyptus essential oil is a nice option
- For systemics, "fungistatic" vs fungicidal
  - Avoids excess spillage of mycotoxins
- Daily garlic bid, either as food or tincture if adding it to food is too hit-and-miss or upsets the stomach
- Add oregano, thyme, rosemary, and sage to cooking
- Tincture of sage + thyme
  - Dose at a very low daily dose in the 2nd/3rd trimester
- Holy Basil, Pau D'arco, and Oregano Oil are NOT recommended in pregnancy
- 

## 52 Breastfed Infant

- Challenge - administration

- Via mom & skin
- Mom-good fats, bioflavonoids, bitters, fiber
- Systemic antifungals, via mom ~  
holy basil, rosemary, thyme  
(Avoid garlic+oregano oil if gas, pau d'arco not proven safe)
- Intranasal antifungal ~  
breastmilk
- Calendula Bath ~  
Flower infusion: emolient vulnerary, soothing antiinflam/flavonoids, lymphagogue  
Leaf tincture: antifungal  
Boil 32 oz water, add 1 cup flowers, steep x 10 mins. Strain, cool to tepid. Add to bath.  
AND add 1 tsp tincture to 8 oz water, bring to boil to burn off alcohol. Remove from heat, let cool to tepid. Add to bath.  
Soak baby 10 min's minimum.
- Coconut milk/oil rubs
- PMID: 29484986

### 53 Ped's

- Challenge - taste, texture
- Prep 2-3 different things that work in case of refusal
- Good fats, bioflavonoids
- Insoluble fiber \*if doesn't cause constipation\*  
If it does, work on liver/bile sluggishness  
Curcuma - nice option bc is a bitter, anti-inflammatory, and protective against mycotoxins  
Golden Milk, or liposomal mixed w resveratrol  
Then try adding fiber (flax seed powder)
- Definitely tx intranasal plus systemic antifungals  
Propolis good option for ped's (antifungal and neutralizes mycotoxins) \*health food stores
- For systemic, pau d'arco, holy basil, thyme  
Ok daily and LT with peds
- 

### 54 Adolescent

- Challenge - compliance, added toxicants, circ rhythm

- Clean body care - perfumes, lotions, acne txs, mouthwashes (tip for parental adulteration)
- Stinky foods reduce stinky body. Molybdenum for garlic intolerance.
- Circ rhythm enforce w supps ~  
 Vit D - early am  
 Melatonin - at dinner time  
 \*caution dose <3mg dt ability to delay puberty
- Detox ~  
 Consider plants vs specific nutrients  
 Caution your effect on puberty - monitor carefully, esp if using glutathione
- Intranasal ~  
 Options for compliance issue w nasal spray:  
 e.o. diffuser in bedroom running all night
- For systemic ~  
 Ok daily and LT: olive leaf, thyme, spilanthus, pau d'arco  
 Pulse: neem, oil of oregano, usnea  
 Discuss with parents about use of alcohol tinctures, CBD

## 55 Review

- Fighting Spirit
- Systemic Antifungals
- Herb-Rx Combinations
- Intranasal Antifungals
- Essential Oils
- Ozone
- Intranasal Biofilm
- Topical Antifungals
- Pregnancy & Ped's

## 56 Thank You

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