

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, spilanthes, pau d'arco
 Pulse: neem, oil of oregano, usnea
 Discuss with parents about use of alcohol tinctures, CBD

55 Review

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- Intranasal Biofilm
- Topical Antifungals
- Pregnancy & Ped's

56 Thank You

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