

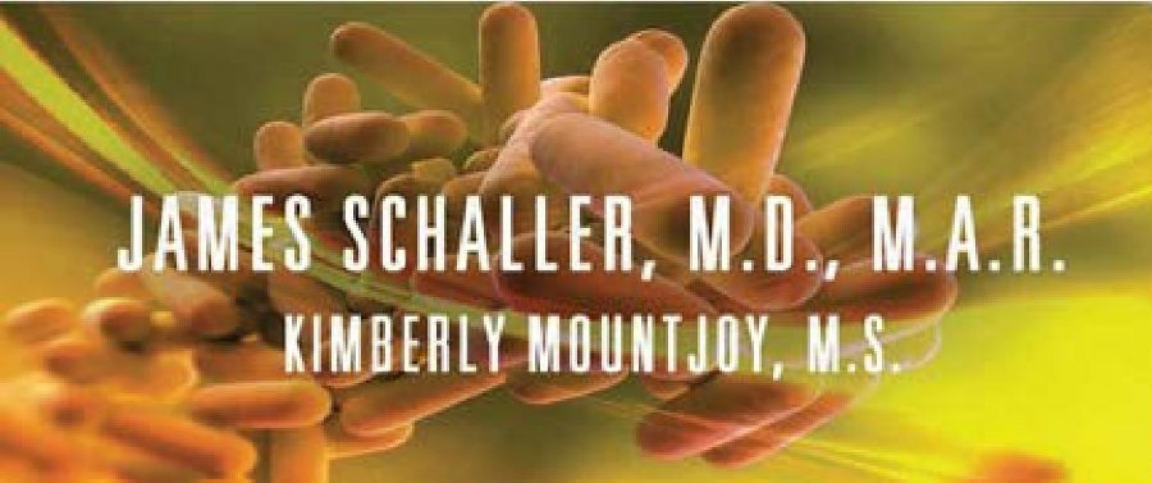


LABANAN ANG BIOFILMS

BAKIT ANG IYONG ANTIBIOTICS ANO ANTI FUNGALS f AIL

Mga Solusyon para sa Lyme Disease, Talamak na Sinusitis,
Pneumonia, Yeast Infections, Sugat, Tenga
Mga Impeksyon, Sakit sa Gum, Sakit sa Bituka,
Bad Breath, Cystic Fibrosis at Implants

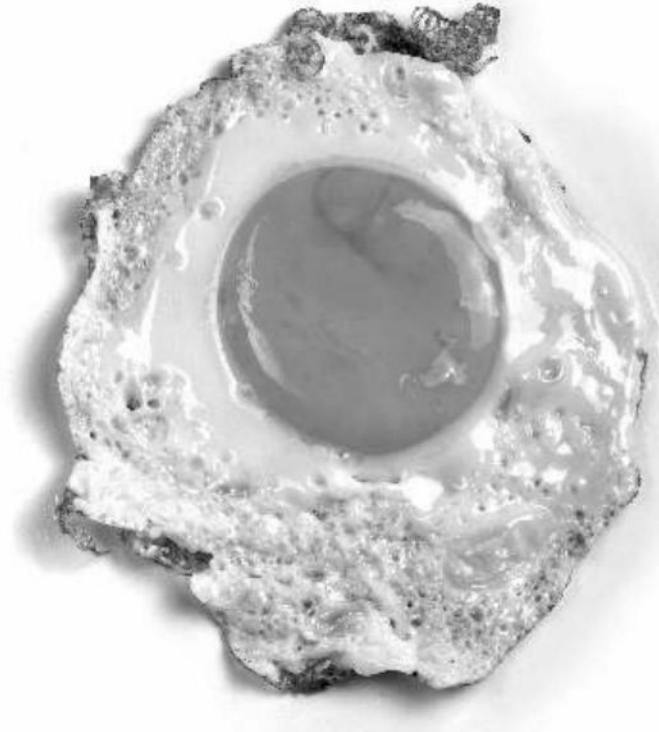
ISANG MAYOR MISSING PIECE SA CHRONIC DISEASE PUZZLE



JAMES SCHALLER, M.D., M.A.R.
KIMBERLY MOUNTJOY, M.S.

Ano ang isang Biofilm?

Ang simple, siyentipikong biofilm na kahulugan: anumang grupo ng mga microorganism kung saan ang mga cell ay dumidikit sa isa't isa sa isang ibabaw. Karaniwang nasa loob sila ng isang layer na kanilang ginagawa na tinatawag na "slime."



Ihambing ang isang biofilm sa isang pritong itlog. Ang dilaw na pula ng itlog sa gitna ng piniritong itlog ay ang bacterial o fungal infection.

Ang mas malaking puting bahagi na pumapalibot sa yolk ay maaaring tawaging "bio-film." Pinoprotektahan nito ang panloob na impeksyon, o yolk, mula sa parehong mga antibiotic at immune system ng tao.

Ang panlabas na gilid ng itlog ay nagpapakita ng ilang napakaliit na pinirito na gilid. Madali silang makaligtaan dahil sa laki ng itlog. Magpapanggap tayo na sila ay mga antibiotic, o mga kemikal na pumapatay sa impeksiyon. Ang mga ito ay walang silbi dahil sa katotohanan na hindi nila nalampasan ang panlabas na puting gilid ng itlog. Ang puti ng itlog ay parang pader sa kanila.

Sino ang May Biofilm Infections?

Kapag nalaman mo ang tungkol sa napakalaking pagkakaiba-iba ng mga lokasyon at sitwasyon kung saan karaniwan ang mga biofilm at isinasaalang-alang na iyon ang kadalasang karaniwang kalagayan ng mga bakterya at fungal na organismo, sisimulan mong mapagtanto na sinuman ay maaaring magkaroon ng impeksyon sa biofilm o mga impeksyon.

Ano ang Hinahanap Natin sa Aklat na Ito?

Ang sumusunod na materyal ay magpapakita ng maraming paraan upang masira ang "puti ng itlog," o biofilm. Kapag nangyari iyon, kadalasan ay mas madaling sirain ang impeksiyon na kinakatawan ng pula ng itlog o dilaw na sentro.

Ang mga Biofilm ay Pangunahing Sanhi ng Pagdurusa at Kamatayan

Mga Lokasyon at Sitwasyon ng Katawan ng Biofilm

- Isang impeksiyon na tumatagal ng higit sa 2 linggo
- Ang pangunahing sanhi ng kamatayan sa mga batang wala pang 6 taong gulang
- Dental plaque—ang bibig ng tao ay nagtataglay ng humigit-kumulang 25,000 species ng bacteria, mga 1,000 sa mga ito ay naninirahan sa dental plaque biofilm.

- Mga impeksyon sa lebadura
- Mga impeksyon pagkatapos ng operasyon
- Kanser
- Mabahong hininga
- Sakit sa gilagid o periodontitis*
- Pagkabulok ng ngipin
- Mga impeksyon sa бага
- Mga impeksyon sa sistema ng ihi
- Oral bacteria—maaaring makapinsala sa mga arterya ng puso at maging sanhi ng kamatayan at pagdami ng mga kanser sa bituka
- Mga talamak na impeksyon sa tainga
- Mga impeksyon sa sinus**
- Talamak na tonsilitis
- Mga sugat
- Mga ulo ng toothbrush — kabilang ang mga istilo ng sonic moving head

- Mga catheter upang payagan ang pag-alis ng ihi
 - Mga artipisyal na tuhod, balakang, at iba pang kapalit
 - Mga impeksyon sa balbula sa puso
 - Mga sugat o sugat
 - Sakit na Lyme
 - Mga IV catheter ng anumang uri
 - Mga catheter sa ihi
 - Mga contact lens
 - Mga itinanim na aparato—anumang itinanim o ipinasok na aparato ay maaaring magpadala ng bakteryang sa utak, atay o bato.
 - Mga talamak na impeksyon sa prostate
 - Legionnaire's disease at marami pang ibang biotoxin bacteria na sumasabog sa anumang panloob na tubig
 - Mga sakit sa amag—na maaaring magmula sa pagkakaroon ng amag sa anumang nakatayong tubig sa loob ng bahay, ibig sabihin, pagbaha, bubong, basement o pagtagas ng bintana, humidifier, hindi nagamit na Waterpik™ o iba pang kagamitan sa paglilinis ng ngipin, condensation
- sa AC ducts, atbp. • Cystic fibrosis—ang labis na paggawa ng mucus sa mga daanan ng hangin ay nagpapahintulot sa bakteryang tulad ng *Pseudomonas aeruginosa* na talunin ang mga pumapatay ng bakteryang sa likod ng isang biofilm coat.
- Nawalang bahagi ng katawan
 - Mga impeksyon sa balat, buhok o kuko
 - Arthritis
 - Endocarditis
 - Mga impeksyon sa buto
 - Acne

Maraming iba pang mga bagay ang maaaring idagdag sa listahan, kabilang ang mga seryosong isyu ng kontaminasyon ng biofilm sa tubig at dose-dosenang iba pang mga kasanayang nauugnay sa kalusugan at pagmamanupaktura.

*Si Doktor David Kennedy, isang retiradong dentista, ay nagdalamhati na karamihan sa mga nasa hustong gulang na Amerikano ay may sakit sa gilagid—isa pang bacterial biofilm na kondisyon na kinasasangkutan ng malalang impeksyon. Kaya gaano kalawak ang palihim na epidemya sa pangangalagang pangkalusugan na ito?

**Sa Ondine Biopharma, isang panayam [kay Richard Longland] ay nagsiwalat na 38,000,000 katao sa bansang ito ay may (o nagkaroon) ng talamak na problema sa sinus.

***Ricardo Murga; Terri S. Forster. Tungkulin ng mga biofilm sa kaligtasan ng *Legionella pneumophila* sa isang modelong potable-water system. *Microbiology* (2001), 147, 3121–3126.

LABANAN ANG BIOFILMS

Bakit Nabigo ang Iyong Mga Antibiotic at Antifungal

**Mga Solusyon para sa Lyme Disease, Talamak na Sinusitis,
Pneumonia, Yeast Infections, Sugat, Tenga
Mga Impeksyon, Sakit sa Gum, Sakit sa Bituka,
Bad Breath, Cystic Fibrosis at Implants**

Isang Pangunahing Nawawalang Piraso sa Talamak na Sakit na Palaisipan

**James Schaller, MD, MAR
at**

Kimberly Mountjoy, MS

**International Infectious Disease Press
Bank Towers • Newgate Center (Suite 305)
5150 Tamiami Trail North [Highway 41]
Naples, Florida 34103**

Paggawa ng Kasalukuyang Mga Sagot na Nagliligtas-Buhay sa Biofilm Malinaw at Rock Solid

Sa ngayon maaari kang magbasa ng dalawang taong halaga ng mga opsyon sa pagwawagi ng biofilm sa mga papeles, blog at aklat. Aabutin ka nito ng 1,000-1,500 na oras. At magkakaroon ka ng ilang mga pagpipilian upang imungkahi. Narito ang ilang halimbawa ng mga opsyon na makikita mo sa mga papel, blog at aklat na iyon:

Iwasan ang magnesiyo	EDTA	Royal Jelly
Iwasan ang mga asukal at butil	DMSO	Thyme
NAC	Vancomycin	Lemon-damo
Norspermidine	Gentamicin	Serrapeptidase
Cis 2- Decenoic Acid	Banderol	2-Aminobenzimidazole
Lumbrokinase	Iwasan ang taba	Mga Echinocandin

Paano Ka Makakahanap ng Makatwirang Marketing at Kumpiyansa sa isang Ahente ng Biofilm bilang Solusyon?

Bina-blog nina Tom at Lisa na ang produktong "x" at reseta na "d" ay mga natatanging paggamot upang pahinain ang mga impeksyon sa biofilm sa Chronic Fatigue (CFS) at Fibromyalgia (FM). Ang mga tao ay nasasabik dahil ang kanilang regular na doktor ay walang pangunahing solusyon at walang interes sa mga impeksyon sa biofilm.

Ang problema ay ang "x" o "d" ay maaaring magkaroon ng paggamit sa pagpapahina ng isang biofilm o pagtulong na madaig ang isang sakit. Ngunit mag-ingat na gumawa ng mabilis na mga link. Ang paggamot na "a" ay maaari lamang gumana sa biofilm ng sampung impeksyon, at mayroon lang kaming patunay na gumagana ito sa tatlong impeksyon.

Ang aming layunin ay ipakita sa iyo kung ano ang ipinapakita ng magandang pananaliksik upang ikaw at ang iyong manggagamot ay makapagsimula sa mga katotohanan at magagawang maunawaan ang dahilan sa likod ng anumang posibleng pagsubok sa biofilm.

Halimbawa, ang iyong impeksiyon ay maaaring katulad ng Lyme sa paggamit nito ng bakal. Iniulat ni Saito at ng marami pang iba na hindi tulad ng lahat ng iba pang kilalang organismo, ang *Borrelia*, ang sanhi ng Lyme disease, ay maaaring umiral nang walang bakal, isang metal na kailangan ng lahat ng iba pang buhay. Sa halip, ang *Borrelia* ay gumagamit ng mangganeso.

Paano kung ang iyong sakit na nakabatay sa biofilm sa hinaharap ay natagpuan na may parehong kakayahang mamuhay nang maayos nang walang bakal? Maaaring mangahulugan ito na maaaring gumana para sa iyo ang isang ahente ng biofilm na sumisira sa biofilm ng Lyme disease. Ang mga biofilm ng bacterial at fungal infection ay may posibilidad na magbahagi ng katulad na kahinaan sa isang biofilm disruptor. Ang pag-alam kung paano gumagana ang iyong impeksyon ay maaaring makatulong upang matukoy kung anong biofilm agent ang gagana.

<http://phys.org/news/2013-03-scientists-reveal-quirky-feature-lyme.html#jCp>. Na-access noong Marso 26, 2014.

Mga nilalaman

Isang Rebolusyong Medikal	1
Ang Limang Yugto ng Biofilms	2
Panimulang Mga Larawan ng Biofilm	3
Isang Karaniwang Bacterium na Matatagpuan sa Lahat ng Balat ng Tao	4
Ang mga Impeksyon ng "Staph" ay Naging Lumalaban sa Karamihan sa mga Antibiotic	5
Ang mga Biofilm ay Binabalewala ng Medikal na Komunidad	20
Paggawa ng "Biofilms" Malinaw	21
Pag-iwas sa Pagdurusa, Mababang Paggana, Kapansanan at Kamatayan mula sa Biofilms	24
Ang Pag-aalis muna ng Biofilm ay Nagiging Epektibo ang Antibiotic	26
Napakaikling Sample ng mga Tao at Biofilms	27
Mga Solusyon	30
Ang mga Biofilm ay Napakaiba-iba	32
Mga Halimbawa ng Malalim na Biofilm Diversity	32
Ang Double Punch: Bakteryang may Biofilm at Paglaban sa Droga	34
Antibiotic-Resistant 'Superbugs' ay isang Matinding Banta 'Sa Napakalapit na Hinaharap'	36
Isang Maikling Salita sa Biofilms sa Lyme	37
Lyme Disease (Borrelia) at Biofilms	38
Dalawang Magkaibang Bakteryang may Biofilm Spells Disaster: Karaniwan Kalinisan ng Ngipin	39
Sample ng Biofilm Care	40
Bartonella at Babesia Biofilms?	43
Konklusyon ng Tick at Flea-Borne Biofilms	43
Mga Biofilm at Mga Impeksyon sa Baga o Sinus: Anatomy of a Mill Medicine Disaster	45
Team Sports: Kapag Maramihang Impeksyon Lahat ay Gumagawa ng Biofilms	46
Babala: Mga Biofilm at Maikli, Nagmadaling Medikal na Sesyon	47

Mga Mahahalagang Langis	48
Mga Pangunahing Kaalaman sa Eugenol	52
Eugenol at Biofilms	53
Linalool	57
Reserpine	59
"Pagsasalansan" ng mga Biofilm Killer	60
Terpenoids	61
Allicin at Bawang	64
Serrapeptidase	67
Lumbrokinase	72
Nattokinase	73
Terminalia chebula Retz	74
Kanser	77
Lactoferrin	82
Pagbili ng Lactoferrin	84
Lactoferrin Xylitol Combination Treatment	86
Paglilimita sa Mga Tradisyonal na Asukal: Pagbaba ng Pamamaga at Mga Biofilm?	87
Ang Sugar Xylitol	88
Erythritol	90
Organoselenium	93
Nakakahadlang ba ang Magnesium Deprivation sa Biofilms?	94
Paghihigpit sa Taba sa Paggamot ng mga Biofilm	97
Houttuynia cordata Thunb (HCT)	101
Sample na Biofilm Trigger Chemicals na Tinalikuran ang Bakterya ..	104
Dobleng Paggamot	105
Ang mga Pinagmumulan ng Halaman ay Bihirang Magbunga ng Isang Kapaki-pakinabang na Kemikal	106
Nitroxoline	107
Lysozyme	109

Aspirin at NSAIDS	110
Azithromycin (Zithromax)	113
Pilak	115
Gingerol	119
Stevia	121
Mga Pangunahing Kaalaman sa Cumanda	123
Cumanda at Biofilms	125
Erythromycin	126
Honey	128
Mabahong hininga	134
Pinapahina ng mga Reverse Amino Acids ang Biofilms	136
Cathelicidin LL-37	139
RNAIII Inhibiting Enzyme (RIP)	141
Tinidazole (Tindamax) at Metronidazole (Flagyl)	142
Tuberculosis (TB)	143
Isang Bagong Tool para Tumulong sa Pagpatay ng TB?	144
Food Powder, Antibacterial Power	145
Konklusyon	146
Apendise	147
Mga Klinikal na Publikasyon ni Dr. Schaller	153
Iba pang Aklat ni Dr. Schaller	155
Disclaimer	169
Pakikipag-ugnayan kay Dr. Schaller	170

Isang Rebolusyong Medikal

Ang teorya ng impeksyon sa biofilm ay isang malalim na rebolusyon sa pag-aaral ng mga impeksiyon na maaaring masakit, hindi nakakapagpagana at sa katunayan, ay isang nangungunang mamamatay depende sa edad ng isang tao.

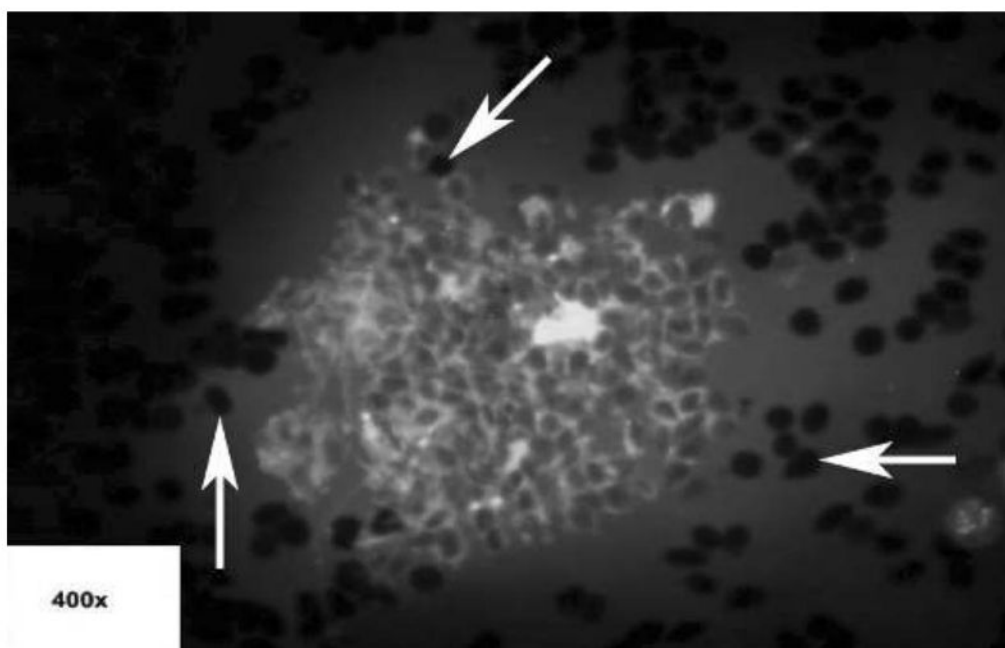
Nagsisimula nang ibalik sa atin ang mga impeksyon sa mga araw kung kailan namatay ang mga tao sa mga simpleng impeksyon. Ang bagong mundo ng impeksyon sa biofilm ay maaaring pumatay ng mas maraming tao kaysa sa pinagsamang WWI at WWII kung ang mga bagay ay hindi mabilis na magbabago sa parehong maunlad at hindi maunlad na mga bansa. Dahil sa mabagal na pag-unawa sa kahalagahan ng mga biofilm at samakatuwid, ang isang mabagal na pag-aampon ng mga doktor ng mga bagong biofilm na solusyon, kahit na ang mga makabagong doktor ay maaari lamang seryosohin ang mga bio-film kapag napatunayang mas maraming tao ang nagiging baldado at namamatay dahil sa kanila. . Sa kasalukuyan, ang karamihan sa mga biofilm ay nakakaligtaan bilang sanhi ng pagdurusa at kamatayan. Kaya, ang mga biofilm na walang solusyon ay kasingseryoso ng polio noong ika-19 na siglo nang walang bakuna, at sa mga tuntunin ng bilang ng mga biktima, ang mga ito ay higit na nakapinpinsala kaysa sa H

Karamihan sa mga bakterya ay naninirahan sa mga komunidad na karaniwang may mga natatanging proteksiyon na biofilm. 1% ng bacteria na nakakahawa sa mga tao o nakakaapekto sa buhay ng tao ay lumulutang mag-isa at kapag sila ay natagpuan sa dugo, hindi sila makikita kasama ng anumang biofilm slime.

Tinatantya ng National Institutes of Health na higit sa 80% ng mga impeksiyong microbial sa katawan ng tao ay sanhi ng biofilm, marami sa kanila ang lumilikha ng mga talamak at paulit-ulit na problema. O, tama ba ang Glowacki at 99% ng bacteria ay nakatira sa isang biofilm? Kung gagamitin mo ang 80% ng NIH o ang 99% ng Glowacki bilang pagtatantya, ang mga biofilm ay isang seryosong pagsasaalang-alang sa mga impeksyon.

Gyowacki R, Strek P, Zagórska-Swiezy K, Składzień J, Olej K, Hydzik-Sobocińska K, Miodoński A. [Biofilm mula sa mga pasyenteng may talamak na rhinosinusitis. Morphological SEM studies].[Artikulo sa Polish]. *Otolaryngol Pol.* 2008;62(3):305-10.

Panimulang Mga Larawan ng Biofilm



Isang bagong genetically unique na biofilm-producing single-celled parasite na pinangalanang FL1953 o *Protomyxzoa rheumatica*. (Ang espesyal na pahid na ito ay ang pinakamahasag na paraan upang matukoy ang mga single-celled na parasito na ito sa katawan ng tao, dahil hindi palaging positibo ang pagsusuri sa DNA o PCR).

Ang daang madilim na oval sa labas ng larawang ito na ipinapakita sa itaas ay 8 micron sized na red blood cell (RBCs). Ang gitnang masa ay isang biofilm na bola na may maraming pulang selula ng dugo sa masa ng biofilm.

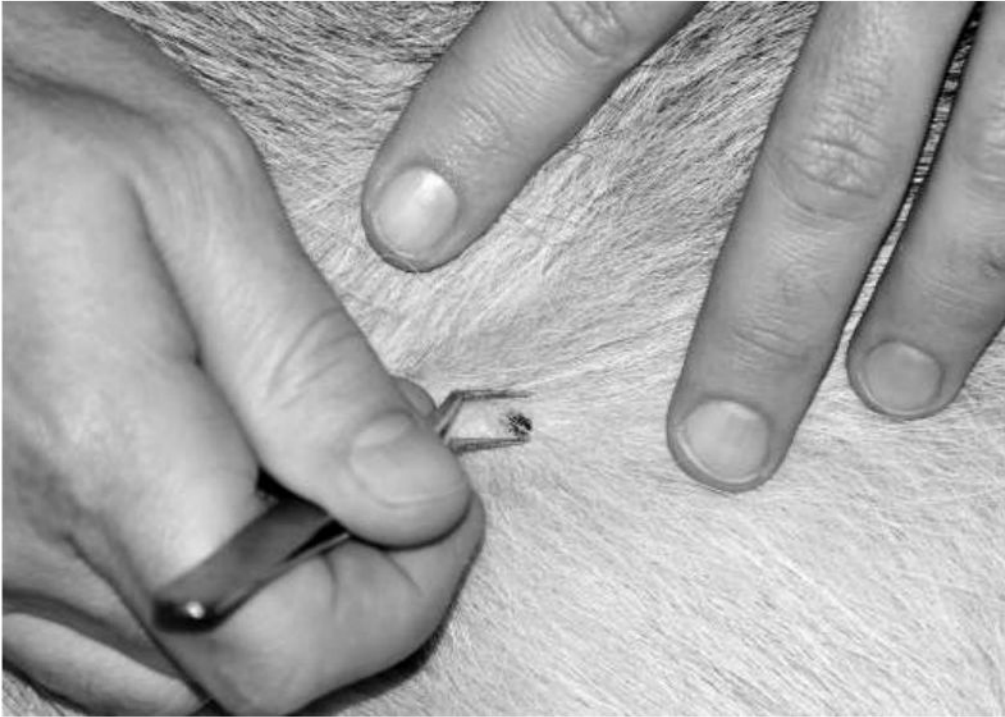
Ang biofilm na ito na ipinapakita sa itaas ay karaniwang matatagpuan sa mga may impeksiyong dala ng tick tulad ng pinakakaraniwang *Bartonella*, ang Lyme disease na *Bor-relia bacterium*, at nakamamatay na *Babesia*. Habang ang ilang sakit na dala ng tick ay maaaring mas malala kaysa sa iba o mas karaniwan kaysa sa iba, lahat ay potensyal na nakamamatay maliban kung maalis. Ang parasite na ito na ipinapakita sa itaas ay isang single-celled na impeksiyon na may kaugnayan sa *Babesia* at malaria, at kapag ito ay tinanggalan ng biofilm nito, ito ay parang hindi pa nabubuong malaria. Ayon sa Centers for Disease Control, ito ay isang natatanging protozoan. Hindi ito *Babesia* o malaria. Ang impeksiyong ito ay tinatawag na FL1953 o *Protomyxzoa rheumatica*. Gumagawa ito ng napakaraming biofilm at ang malaking sentrong masa sa larawang ito ay naglalaman ng daan-daang pulang selula ng dugo.



Habang tinitingnan natin ang iba't ibang organo at sanhi ng mga biofilm, hindi natin dapat iwanan ang isang vector ng mga impeksyon sa biofilm na dala ng mahigit 200 buhay na bagay sa hindi bababa sa tatlong kontinente—ang Ixodes tick.

Nagdadala ito ng hindi bababa sa dalawang seryosong gumagawa ng biofilm: FL1953 at ang napakakomplikadong genetical-ly advanced na Lyme bacteria. Pinag-aaralan pa namin ang lahat ng posibleng impeksyong dala nito.

Mangyaring tandaan na ang buhok ay mukhang malaking damo, kaya ang tik na ito ay isang maliit na bahagi ng laki na ito. Kapag pinagsama mo ang invisibility sa isang kagat na may pain kill-er, isang anti-histamine, isang anti-coagulant at isang anti-inflammatory agent, mayroon kang stealth infection carrier. Ang isang kemikal na laway ng tik, Sialostatin L, ay napakahusay na enzyme na pumipigil sa immune na maaaring makapigil sa asth-ma (Horka 2012).



Ang mga aso ay maaaring maging matalik na kaibigan ng tao, ngunit hindi kung hinawakan mo ang kanilang laway at hindi kung nagdadala sila ng mga garapata o pulgas sa iyong bahay o sasakyan. Ipagpalagay na ang bawat aso at pusa na nakatira sa labas ng lungsod ay malamang na nagkaroon ng tik o pulgas.



Paggawa ng "Biofilms" Clear

Ang isang biofilm ay parang isang barya sa gitna ng isang pool ng langis ng oliba, at sa panlabas na gilid ng langis ay ang paminta na kumakatawan sa mga cell na pumapatay ng impeksyon. Hindi sila makagalaw para sirain ang barya. Ang mga komunidad ng bakterya ng biofilm ay ang karaniwang estado ng karamihan sa mga impeksyon sa tao. Itinuro sa amin na ang mga in-fectious ay mga nakahiwalay na bakterya na lumulutang sa paligid at ito ay isang malubhang error.

Ipinapakita nito kung gaano kalayo ang kailangan nating gawin sa agham kung ang pangunahing anyo ng bakterya—biofilm bacteria na komunidad—ay isang bago, ngunit mahalaga, konsepto. Noong gumawa ako ng isang listahan noong 2004 ng dalawampu't limang opsyon sa pagpatay ng mga biofilm, walang gaanong interes.

Ngayon, ang kawalan ng kakayahang sirain ang mga biofilm na may magkakaibang mga opsyon ay literal na isang kalamidad sa kalusugan.

Ang layunin sa pagsulat at pag-publish ng aklat na ito ay gumawa ng abot-kayang hanay ng mga opsyon na nakabatay sa muling paghahanap kasama ng iba pang posibleng mga opsyon, upang ipakita ang isang purong libro ng mga solusyon na nag-aalok ng pinakabagong posibleng kasalukuyan at napapanahon na mga solusyon para sa daan-daang mga sakit na nauugnay. may mga biofilm. Ang hadlang ng isang biological na pelikula ay maaaring maging ganap na imposibleng alisin o i-pen-etrate gamit ang mga nakagawiang opsyon na ginagamit ng mga manggagamot, mga espesyalista sa impeksyon, mga naturopath, mga paaralan ng alternatibong gamot, mga practitioner ng mahahalagang langis, mga acupuncturists, mga nurse practitioner o mga herbalista.

Sa aklat na ito, umaasa kaming mapagsilbihan ka at ang iyong manggagamot/manggagamot sa pamamagitan ng paggalugad ng mga opsyon na magagamit na ngayon. Hinanap namin ang nakalipas na limang taon ng mga publikasyon sa PubMed—ang napakalaking database para sa medikal na agham—para sa "paggamot sa biofilm." Ang hanay ng mga opsyon ay kahanga-hanga at hindi palaging mga bagay na maaari mong asahan. Nilalayan ng aklat na ito na bigyan ka ng malawak na mga opsyon upang maiwasan ang iyong pagdurusa, kapansanan at maging ang kamatayan.

Pagkatapos ng mga taon ng pagsasaliksik at pag-aaral, napagtanto ko na ang mga nakakahawang sakit na "mga eksperto" sa biofilm ay maaaring matagal nang natalo sa digmaan, at sa katunayan, marami ang maaaring hindi pa nakakaalam ng lahat ng mga labanan. Pa-

Napakaikling Sample ng Mga Tao at Biofilm

Noong 2004, si Richard Longland ay nakabawi nang husto mula sa isang misteryosong sakit pagkatapos ng operasyon sa gulugod. Sa sumunod na mga buwan, dumanas siya ng maraming problema—sakit ng ulo, pananakit ng kasukasan, at kalaunan ay mga problema sa puso at utak, malupit na pagkapagod at problema sa pag-iisip.

Ang sistemang medikal ay sumalungat sa kanya, ngunit sa wakas, noong 2007, siya ay ginamot para sa mycoplasma na nagmula sa isang posibleng proseso ng operasyon, anumang lugar sa ospital o sa isang pampublikong lokasyon o isang tik.

Karamihan sa aking mga pasyente ay nagpatingin sa 3 hanggang 200 na mga doktor bago pumunta sa akin. Naiintindihan ko ang kanyang karanasan. Kinailangan ni Mr. Longland na magpatingin sa mahigit dalawampung doktor para sa diagnosis. Sa mahirap na panahong ito, lumikha siya ng isang superyor na pelikula na tinatawag na "Why Am I So Sick?" Siya ay isang pasyente-kampeon ng paggamit ng mga pharmaceutical at naturopathic na ahente upang alisin sa kanyang katawan ang mga systemic bacterial biofilms.

Si Edward ay 78 taong gulang at mayroon siyang tatlong anak na babae at walong apo. Naospital siya dahil sa kakapusan ng hininga. Mayroon siyang masamang pneu-monia o impeksyon sa kanyang baga. Lumalala na siya. Naka-recover ang mga indibidwal gamit ang mga ahente na nakatalo sa maraming pulmonya na protektado ng biofilm.

Ilang taon nang pagod si Linda at nahihirapan sa pag-aaral. Nalaman ko kamakailan na mayroon siyang isang bilang ng mga impeksyon sa tik na naging sanhi ng higit sa labinlimang resulta ng lab na maging abnormal. Kahapon ay tumawag siya, at dahil sa sakit sa likod ng kanyang tuhod, sinabi ko sa kanya na pumunta sa ER. Wala pang isang araw, natagpuan siyang may 23 clots sa kanyang baga at binti. Hinala niya ito ay Babesia, pamamaga at FL1953. Mayroon kaming mga ahente na pumatay sa mga ahenteng ito, kabilang ang FL1953, noong 2006.

It would be an error to say that nattokinase, lumbrokinase, serrapeptidase, EDTA, gentamicin, vancomycin, Samento, Banderol, olive products, poorly known herbs with fair lab testing in humans, clove bud oil, diet, chelation, three to four part amino acid mixes, NAC, Rife, diet changes or a vast range of other options not listed, will **work for all biofilms**. For example, an elderly patient dying of a lung infection or another person with painful and treatment-resistant sinus infection *will not* have the same biofilm.

As a trend, trying different options to destroy a biofilm is less dangerous than allowing it to spread.

A Brief Word on Biofilms in Lyme

At times, individuals who have tick- and flea-borne infections, like Bartonella, Babesia and Borrelia (Lyme disease), can feel their treatment is minimal or incomplete. Debates rage over the diagnosis and treatment of Lyme and tick-borne diseases; whether the pain is from residual dead infection incorporated into tissue or one of the many infections carried by the I. scapularis tick, we still have patients' misery.

After writing **twelve books** which include many pages on non-Borrelia infections, “Lyme testing” seems like alphabet testing in which ***one only looks for the vowel “a.”*** Due to the lack of acceptance of the number and complexity of tick-borne infections, there is a lack of up to date education, leaving quality medical doctors to evaluate tick and flea infections in the ***abstract***, by which I mean that they very falsely and sadly do not realize the full magnitude of ***“the alphabet.”***

Specifically, they “diagnose” by ignoring inflammation alterations, nutrient changes, hormone deficits, immunity changes caused by tick-borne infections, and chemicals made or suppressed by direct tick and flea infectious agents. I discuss these in my three most recent tick and flea infection books. All are available in English. All can be found free through inter-library loan, for less than \$20 USD, or at www.personal-consult.com under the “free books” button. No one can expect to become an expert in this massive area after reading any guide or merely going to ten conferences, because these cluster infections impact twenty areas of medical and scientific knowledge.

In the last four years, researchers like **Dr. Eva Sapi have shown Lyme is like some other spirochetes—it has biofilms. These are very tough biofilms to defeat unless caught in the “acute stage.”** A tough, “mature biofilm” allows organisms to **“laugh at” many antibiotics.**

Some medical professionals interested in Lyme often ignore the immune suppressing Bartonella bacterium, which is more common than Lyme. Ignoring coinfections may increase the risk of fatality with Babesia and possibly **FL1953**. These healers also may not realize that the highly

genetically complex Lyme spirochete appears to have a troublesome biofilm. Performing a simple direct test at laboratory companies whose testing kits have reduced sensitivity will probably result in more negatives for tick-borne diseases. The ultimate result is anti-science and anti-truth. Searching for tick infections with one test is like writing in “Lincoln” at the next presidential election.

Lyme Disease (*Borrelia*) and Biofilms

Several researchers believe *Borrelia burgdorferi*, the active agent of Lyme disease, has biofilms. Lyme organism biofilms have been found in culture and in the tick gut. Lyme cysts and biofilms have also been noted in patient skin biopsies using focus floating microscopy according to Dr. Eisendle publishing in the *American Journal of Pathology*.

Further, we see in Lyme that biofilm formation is dependent on cyclic di-GMP expression and we see that in Lyme (Stricker and Johnson).

Brihuega B, Samartino L, Auteri C, Venzano A, Caimi K. In vivo cell aggregations of a recent swine biofilm-forming isolate of *Leptospira interrogans* strain from Argentina. *Rev Argent Microbiol*. 2012 Jul-Sep;44(3):138-43. PMID:23102459

Cogoni V, Morgan-Smith A, Fenno JC, Jenkinson HF, Dymock D. *Treponema denticola* chymotrypsin-like proteinase (CTLP) integrates spirochaetes within oral microbial communities. *Microbiology*. 2012 Mar;158(Pt 3):759-70. Epub 2012 Feb 7. PMID:22313692

Sapi E, Kaur N, Anyanwu S, Luecke DF, Datar A, Patel S, Rossi M, Stricker RB. Evaluation of in-vitro antibiotic susceptibility of different morphological forms of *Borrelia burgdorferi*. *Infect Drug Resist*. 2011;4:97-113. Epub 2011 May 3. PMID:21753890

Stricker RB, Johnson L. Lyme disease: the next decade. *Infect Drug resist*. 2011; 4: 1-9. PMID: 21694904

Sapi E, Bastian SL, Mpoy CM, Scott S, Rattelle A, Pabbati N, Poruri A, Burugu D, Theophilus PA, Pham TV, Datar A, Dhaliwal NK, MacDonald A, Rossi MJ, Sinha SK, Luecke DF. Characterization of biofilm formation by *Borrelia burgdorferi* in vitro. *PLoS One*. 2012;7(10):e48277. Epub 2012 Oct 24. PMID:23110225

lease of bacteria in the human body will be like a dangerous tornado in a field. It is a wise concern.

For these two problems regarding biofilm-held infections suddenly being released, here are useful solutions:

1. You need many infection killing options for use since more is better to prevent “seeding” of dispersed infection.
2. You want the biofilm killing options to destroy biofilms by different mechanisms. This makes the dispersed seeded infections naked to the immune system.
3. Biofilm tools are given initially at low doses and then increased gradually to large doses since often in the beginning patients have massive inflammation and a drastic increase in killing of biofilm organisms in a short time could cause trouble with bone marrow, liver, heart, eye, or kidney issues, or merely create more dead infectious debris resulting in patient misery.
4. You may need to pulse (use every other day) or fully stop this treatment because once a wave of biofilm eroding agents strips off or severely damages a biofilm of an infection, the same antibiotics that were useless in the past can become very effective.
5. There is no single master biofilm destroyer, yet some are broader than others.

Bartonella and Babesia Biofilms?

Most people have heard of the profoundly common tick infection Lyme disease, but they may not know Bartonella is more common than Lyme and is carried by far more vectors (Breitschwerdt). Babesia decimated the cattle population in the southern United States many decades ago and is more dangerous in humans than Lyme.

Currently, we have no solid data showing Bartonella and Babesia have biofilms.

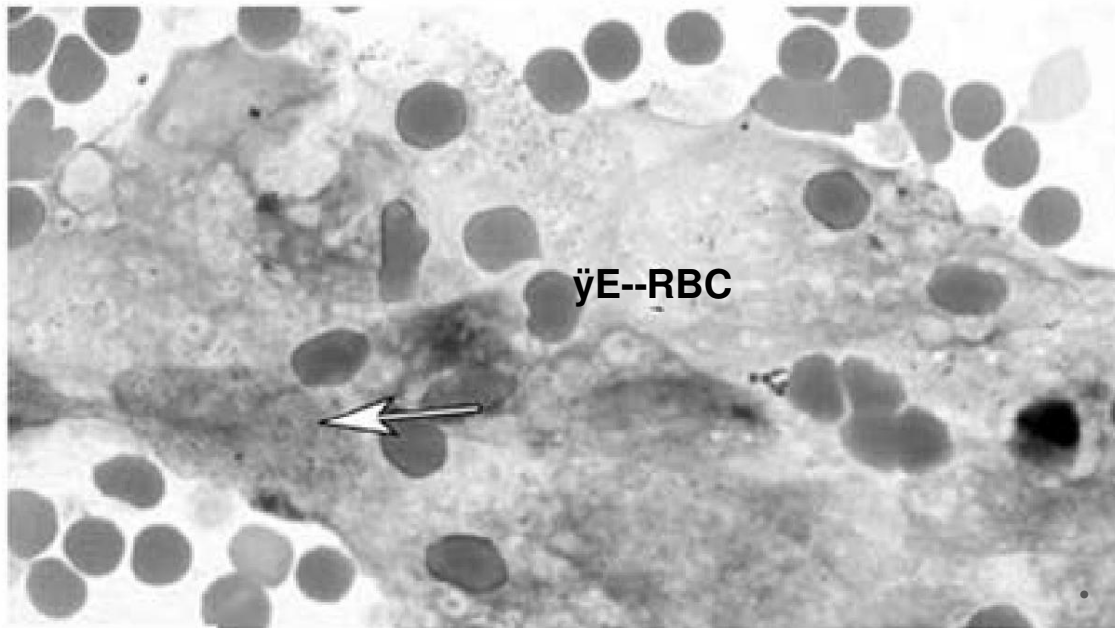
Tick and Flea-Borne Biofilms Conclusion

Below you will see that mouth spirochetes routinely have biofilms. Another spirochete is Leptospira which is able to make biofilms in many environments and may contribute to lost pregnancy in mammals (Brihuega).

In terms of tick and flea infection biofilms, I would focus on **FL1953** (Protomyxzoa) and Lyme, since both have been known and treated by us since 2006, though the former was killed without knowing its genetic uniqueness. We are learning what decreases their biofilm pathology and have agents that should work if one is open to look at diverse approaches. A synthetic “antibiotic only approach” to biofilms, including antibiotics targeted to hit biofilms, might be similar to typing with one finger.

There are herbalists, such as Stephen Buhner, who propose selected herbs to treat some tick infections. And, in terms of **primary treating herbs to kill organisms**, there are also credible options that are not always herbal in use for a tick or flea infection. We will continue to use **advanced lab testing**, typically only allowed under physician supervision, to determine by serious extensive **indirect blood exam** biochemistry tests to see which infection is actually destroyed in people experiencing benefit from herbal therapy. In any event, I enjoyed this line from Buhner: *“I can’t really say what will clear all biofilms.”*

Isa pang Sample na Biofilm Image



Ang maitim na IOWld oVils aie pulang dugo "°Us (-blade upp« uwak),
 Tho "sheet" diat ay magsisimula sa illo right low« '°'11«, mowig patungo
 sa tho left upper oomer, ill an biofilm, rnlffial Ang IOW\ll' mow ia
 poi111i11g sa isang maliit na bam:rium. (Piy Labaratoriea)

Mga Pangunahing Kaalaman sa Eugenol

Ang Eugenol ay matatagpuan sa maraming mahahalagang langis at halamang gamot. Halimbawa, ito ay matatagpuan sa mataas na potency sa clove bud essential oil ngunit din sa mas mababang dosis sa cinnamon leaf at sa essential oil nito. Ito ay matatagpuan din sa pimento, bay, sassafras, massoy bark oils, oil of camphor at chamchwi plants ayon sa PubChem. Ang potency at konsentrasyon ay malawak na nag-iiba depende sa pinagmulan at paraan ng pagkuha. Dagdag pa, ito ay hindi lamang isang makapangyarihang ahente ng biofilm; mayroon itong iba pang kamangha-manghang katangian tulad ng mga anti-viral na aksyon at anti-



Halimbawa, ipinakita ng Tragoolpua at Jatisatiendr na ang eugenol ay nakakaapekto sa oral at genital Herpes depende sa species, strain at iba pang mga kadahilanan. Nilinaw nila na ang mahahalagang langis ay maaaring maging mas malakas kaysa sa isang simpleng katas. Sa katunayan, ang oral at genital Herpes, HSV-1 at HSV-2, ayon sa pagkakabanggit, ay hindi maaaring magparami sa pagkakaroon ng eugenol. Al-Sharif ay nagpakita ng makabuluhang epekto ng kanser. Ang napakababang konsentrasyon ($2 \mu\text{M}$) ay may partikular na toxicity laban sa iba't ibang mga selula ng kanser sa suso. Ang epekto ng pagpatay na ito ay pinamagitan sa pamamagitan ng pag-udyok sa isang cancer cell death path at pagpapababa sa mga antas ng E2F 1 at survivin--dalawang mole-cule na mahalaga sa cell survival. Ito ri

genes. Importantly, these anti-proliferative and pro-cancer cell death effects were also observed inside body grafts placed in non-human animals.

<http://pubchem.ncbi.nlm.nih.gov/summary/summary.cgi?cid=3314>

Tragoalpua Y, Jatisatiennr A. Anti-herpes simplex virus activities of *Eugenia caryophyllus* (Spreng.) Bullock & S. G. Harrison and essential oil, eugenol. *Phytother Res.* 2007; 21(12):1153-8.

Al-Sharif I, Remmal A, Aboussekhra A. Eugenol triggers apoptosis in breast cancer cells through E2F1/survivin down-regulation. *BMC Cancer.* 2013 Dec 13;13(1):600. [Epub ahead of print]

Eugenol and Biofilms

Recently, Dr. Zhou has reminded us of a special process that is involved in the formation of dangerous biofilms. Basically, many bacteria have a “chatty” way of talking to other cells such as other bacteria. So, bacteria use chemicals or cause other bacteria to make chemicals to help them survive and often act to harm you or a loved one.

Eugenol is so effective that at very low amounts, it still disrupted bacteria chemical communication. This is very important in a biofilm destroying agent. If cells cannot communicate, it is doubtful they can form communities. Biofilms are community creations. **Further, eugenol at very low doses, called “sub-inhibitory concentrations” inhibited biofilm formation.**

One type of biofilm research being conducted compares biofilm killers head to head. The results are not always the same, perhaps in part because the infections are not always the same. Note that in an Epub abstract before publication, Malic explains that the best essential oil for urinary catheters, with or without biofilms, against fourteen different bacteria was eugenol. This is why I believe this substance is a “double killer.” It can defeat many biofilms, and then kill the organism making the biofilm. Finally, in this study, eugenol did better than tea tree oil.

Linalool

According to the Merriam-Webster dictionary, the word linalool is derived from a Medieval Latin phrase meaning “wood of the aloe.” Linalool has a nice smelling alcohol and essential oils. It is used in perfumes, soaps, and flavoring materials.

In terms of biofilms, it seems to be most effective when **the essential oil part** is used, which has **the most evidence of killing Candida albicans**. (Candida albicans is the cause of yeast infections.) Yet, again, it is the essential oil fraction that not only **inhibits the growth** of Candida albicans but also of the bacteria Lactobacillus casei, Staphylococcus aureus, Streptococcus sobrinus, Porphyromonas gingivalis and Streptococcus mutans cell suspensions, all of them associated with oral cavity disease, according to Alviano and Mendonça-Filho. Yet, Budzyńska reported this essential oil did not fully remove biofilms formed by Staphylococcus aureus (ATCC 29213) and Escherichia coli (NCTC 8196) on the surface of routine medical materials such as urinary catheters, infusion tubes and surgical mesh.

Hsu found that linalool could be effective against Candida albicans due to its many genetic blocking effects. For example, using a scanning electron microscope and other technology, many signs of the effect of linalool to destroy Candida or inhibit its growth could be noted. Hsu found blocking actions against genes involving adhesion production and the formation of “branches” or the mold’s hyphae were both decreased by linalool.

<http://www.merriam-webster.com/dictionary/linalool>

Budzyńska A, Wieckowska-Szakiel M, Sadowska B, Kalemba D, Różalska B. Antibiofilm activity of selected plant essential oils and their major components. Pol J Microbiol. 2011;60(1):35-41. PMID:21630572

Alviano WS, Mendonça-Filho RR, Alviano DS, Bizzo HR, Souto-Pradón T, Rodrigues ML, Bolognese AM, Alviano CS, Souza MM. Antimicrobial activity of Croton cajucara Benth linalool-rich essential oil on artificial biofilms and planktonic microorganisms. Oral Microbiol Immunol. 2005 Apr;20(2):101-5.

Reserpine

Reserpine is a substance found in the roots of some types of Rauwolfia that has been made into a traditional medicine. It is used to lower high blood pressure and help with psychotic symptoms, but side effects have limited its use.

While it may not be comfortable to use at modest or high dosing, very low dosing, according to Magesh, showed it to be profoundly powerful against *Klebsiella pneumoniae*. In one report, he used reserpine and was able to stop biofilms in this pneumoniae infection at a fraction of the dose thought to inhibit growth.

Specifically, a tiny fraction of this drug, a mere 0.0156 mg/ml, stopped biofilm production in *Klebsiella pneumoniae*. So, it may be possible that we have another example of a medical truth I use every day:

“Change the dose and you change the drug or herb.”

In this case, perhaps it is possible that 1/10th of the lowest size tablet, 0.1 mg, could harm *Klebsiella* and other infections and be safe for the patient. However, the raw materials for making it may be hard to find some months according to ASHP who tracks pharmacy shortages.

Magesh H, Kumar A, Alam A, Priyam, Sekar U, Sumantran VN, Vaidyanathan R. Identification of natural compounds which inhibit biofilm formation in clinical isolates of *Klebsiella pneumoniae*. *Indian J Exp Biol*. 2013 Sep;51(9):764-72.

<http://www.ashp.org/DrugShortages/Current/Bulletin.aspx?id=975>

“Stacking” Biofilm Killers

While physicians may ponder the problems caused by biofilms in practice, I rarely encounter the doctor who understands that it is usually better to have more than one treatment. In the article below, **oral bio-film infections were controlled best by three agents, not merely one.** For example, Alves explains that when you are going to irrigate or clean a root canal area, that two mouth bacteria infections protected by their biofilms have these same film barriers decreased significantly by treatment with farnesol, xylitol and lactoferrin together.

The same results were found in wounds. One of the best treatments for wounds is the use of a silver-based wound dressing or bandage, together with a gel containing xylitol and lactoferrin (Ammons).

Alves FR, Silva MG, Rôças IN, Siqueira JF Jr. Biofilm biomass disruption by natural substances with potential for endodontic use. *Braz Oral Res.* 2013 Jan-Feb;27(1):20-5. PMID:23306623

Ammons MC, Ward LS, James GA. Anti-biofilm efficacy of a lactoferrin/xylitol wound hydrogel used in combination with silver wound dressings. *Int Wound J.* 2011 Jun;8(3):268-73. Epub 2011 Apr 1. PMID:21457463

Terpenoids

I would like to mention a class of options that come from a familiar substance, chemicals from tea tree oil. We have already mentioned linalool which is part of this class individually, since it comes up as a leading biofilm killer. According to Raut, as many as 14 terpenoids derived from tea tree oil inhibit biofilms, and α -terpineol, nerol, isopulegol, carvone, linalool, α -thujone and farnesol are worthy of special note. Eight terpenoids have effects on **mature** yeast biofilms (*Candida albicans*).

A study by Ramage shows tea tree oil (TTO), terpinen-4-ol (T-4-ol), and α -terpineol displaying potent activity against 69 biofilm-forming *Candida* strains, of which T-4-ol and α -terpineol displayed rapid kill action.

Of these three, T-4-ol displayed no significant toxicity to cells. These data provide further laboratory evidence that TTO and its derivative components, specifically T-4-ol, exhibit strong antimicrobial properties against fungal biofilms. Further, T-4-ol appears to possess safety advantages over the complete essential oil (TTO) and may be suitable for prevention and treatment of established oral and upper throat cavity candidosis. Certain terpenoids are components of spices or food ingredients generally regarded as safe (GRAS) (Pauli 2006).

In another study, several chemicals from plants were tried against two very common bacteria (Budzyńska), *Staphylococcus aureus* (ATCC 29213) and *Escherichia coli* (NCTC 8196), both with biofilms on the surface of **routine** medical products, i.e., urinary catheter, infusion tube and surgical mesh. All three are present in most advanced hospitals and other settings. Surgical mesh was the surface most prone to persistent colonization since the biofilms that formed on it, both by *S. aureus* and *E. coli*, were difficult to destroy.

Melaleuca alternifolia is the source of Tea Tree Oil (TTO). *Lavandula angustifolia* yields Lavender, English Lavender and True Lavender (LEO). *Melissa officinalis* is Lemon balm (MEO). Tea Tree oil, Lemon balm, α -terpineol and terpinen-4-ol showed stronger anti-biofilm

Allicin and Garlic

Garlic has been used as a medicine throughout human history. Allicin is considered one of the medically useful components of garlic. Other useful components are discussed in Chinese language pharmacology texts.

As early as 2003, the use of allicin against *Staphylococcus epidermidis* had reported effects on biofilm formation at low dosing. Pérez-Giraldo reported that lab testing showed that allicin diminished biofilm formations.

Lihua reported ten years later that allicin impacts *Pseudomonas aeruginosa* biofilm. This is hardly casual information, since *P. aeruginosa* is likely resistant to multiple antibiotics, and this resistance may be due to biofilms. Organosulfur allicin has been shown to inhibit surface-adherence of bacteria and Lihua demonstrated that allicin could inhibit early bacterial adhesion which is a first step to bacterial community formation, usually just before biofilm production.

Other researchers isolated various components of garlic and tested the most active components. The following three components were examined:

1. garlic extract
2. allicin
3. diallyl sulfide (DAS)

They were tested against the serious mouth and dental infection *Aggregatibacter actinomycetemcomitans*, the primary cause of severe aggressive periodontitis and other non-oral infections.

Lumbrokinase

We appreciate that some people interested in progressive medicine feel this enzyme, Lumbrokinase, is a useful substance. Some have suggested it is useful in the removal of biofilms. If that is true, we had trouble finding the evidence for that position. However, it does seem that some researchers see a potential for this enzyme to “digest” pathological clots. This possibility seems to have some support, and at this time we will only wait for further research. Since we are only proposing biofilm options that are supported by research and since human use is just starting in research settings, we do not promote this agent at this time.

Ryu GH, Park S, Han DK, Kim YH, Min B. Antithrombotic activity of a lumbrokinase immobilized polyurethane surface. *ASAIO J.* 1993 Jul-Sep;39(3):M314-8. PMID:8268550

Kim JS, Kang JK, Chang HC, Lee M, Kim GS, Lee DK, Kim ST, Kim M, Park S. The thrombolytic effect of lumbrokinase is not as potent as urokinase in a rabbit cerebral embolism model. *J Korean Med Sci.* 1993 Apr;8(2):117-20. PMID: 8397927

Mihara H, Sumi H, Yoneta T, Mizumoto H, Ikeda R, Seiki M, Maruyama M. A novel fibrinolytic enzyme extracted from the earthworm, *Lumbricus rubellus*. *Jpn J Physiol.* 1991;41(3):461-72. PMID:1960890

Wang KY, Tull L, Cooper E, Wang N, Liu D. Recombinant Protein Production of Earthworm Lumbrokinase for Potential Antithrombotic Application. *Evid Based Complement Alternat Med.* 2013;2013:783971. Epub 2013 Dec 12. Review. PMID:24416067

Cao YJ, Zhang X, Wang WH, Zhai WQ, Qian JF, Wang JS, Chen J, You NX, Zhao Z, Wu QY, Xu Y, Yuan L, Li RX, Liu CF. Oral fibrinogen-depleting agent lumbrokinase for secondary ischemic stroke prevention: results from a multicenter, randomized, parallel-group and controlled clinical trial. *Chin Med J (Engl).* 2013 Nov;126(21):4060-5. PMID:24229674

Huang CY, Kuo WW, Liao HE, Lin YM, Kuo CH, Tsai FJ, Tsai CH, Chen JL, Lin JY. Correction to Lumbrokinase Attenuates Side-Stream-Smoke-Induced Apoptosis and Autophagy in Young Hamster Hippocampus: Correlated with eNOS Induction and NFκB/iNOS/COX-2 Signaling Suppression. *Chem Res Toxicol.* 2013 Jul 15;26(7):1126. Epub 2013 Jun 7. PMID:23746067

tract also made the pneumonia far more susceptible to the antibiotic tobramycin. Further, genes involved with resistance to antibiotics were down-regulated.

- Bag published that highly resistant urine organ infections were more vulnerable to treatment with *T. chebula* but proposed this is due to its ability to collect iron, since adding iron reduced its effect. However, Bag only tested one of many chemicals from this fruit, and I would suggest other components may have antibacterial action and work by other means.
- Four carefully chosen antibacterial plants (*P. guajava*, *T. chebula*, *A. aspera*, and *M. elengi*) are combined with four solvent extracts (hexane, ethyl acetate, ethanol, and methanol) by Kamal Rai Aneja, who initially evaluated their anti-cavity activity against *S. mutans*. All four of the plants showed activity against *S. mutans*. Ethyl acetate extracts of the four plants showed high antibacterial activity against *S. mutans*, superior to the other solvent extracts. Further, *T. chebula* ethyl acetate extract acts as an effective anti-cavity agent by inhibiting *S. mutans* and *C. albicans*. However, we were unable to find evidence if the benefit of these chemicals involved biofilm removal.

In conclusion, we appreciate that this medicine is proposed to both dissolve Lyme biofilms and also destroy the underlying Lyme bacteria. We offer no opinion on this belief. We do not want to oppose or support its use in terms of biofilm ability. It appears this fruit does act on the bacteria biofilm of *P. aeruginosa*, but Lyme bacteria are not the same as *P. aeruginosa* bacteria. Lyme is also profoundly more genetically complex than a “relative” spirochete bacterium, syphilis.

Therefore, while we do note that this medicine has antibacterial and cell protection actions, and **we accept some patients feel better**, we presently cannot say it is due to biofilm removal in those with tick-borne infections.

Cancer

Cancer has many causes. Some things increase your risk and other things can decrease your risk. It is rarely pure genetics, even in those with genetic vulnerability. We know some types of plastics increase rates of breast cancer. We know the 200 poisons in cigarettes cause lung cancer. We know various chemicals made by various companies can increase cancer, despite the reality that most US and international chemicals have limited or no top research on their safety.

I like my dental hygienist. And, I like making sure my gums and teeth are “safe.” Why? At first it was because I want to have teeth in twenty years. But, she correctly reminds me that heart attacks are increased by gum disease which is routine in many countries.

Yet, even this passionate healer was not aware of the role of biofilms in cancer. Yes, I said cancer. We are only beginning to understand the role of infections in triggering cancer diseases.

Many years ago, I was working with a physician who asked me to help research possible cures for his cancer. Eventually, that cure was found and written up, taking over 200 hours and many months to complete, with the help of a top medical editor in North America—the former editor of the *Journal of the American Medical Society* and forty other journals, specifically, George Lundberg, who worked feverishly to get this death disorder cure in print ASAP (Schaller).

Years later, he asked me to write a follow up, and we had found that over eight top infection specialists in the United States had missed Babesia, a common parasite that is harder to kill than malaria and which can occasionally increase eosinophils (Schaller). The patient’s trouble included the fact that he had so many eosinophils, his blood could clot quickly. The point? Eosinophils are a type of white blood cell designed to kill parasites. The man’s disorder (HES) Idiopathic Hypereosinophilic Syndrome, which is often fatal and means that eosinophils reproduce out of control, was primed by a Babesia infection. Not all patients with HES also have a Babesia infection, but after writing six books which

Lactoferrin Xylitol Combination Treatment

In a fascinating look at this proposed double treatment, Mary Ammons shares that treatment of *Pseudomonas aeruginosa* biofilm with both lactoferrin and xylitol inhibits the ability of bacteria to respond to damage resulting from lactoferrin iron chelation.

Pseudomonas aeruginosa has been identified as the most common biofilm-forming infection in chronic wounds. The immune stimulating molecule lactoferrin and the rare sugar alcohol xylitol, together, were effective in the lab against *P. aeruginosa* biofilms.

How? Lactoferrin iron chelation was identified as the primary means by which lactoferrin undermines the bacterial membrane. Amazingly, this combination showed huge alterations in the expression of the bacteria's genes, but these changes are too complex for a summary. The findings mean that critical chemicals made by *P. aeruginosa* had changed.

Siderophore detection verified that xylitol is the component of this unique double treatment that inhibits the ability of the bacteria to produce siderophores under conditions of iron restriction. Siderophores sound complicated—here is the simple meaning: they are some of the strongest iron binders in the world and they are made by bacteria, viruses and fungi.

The study concludes with two points:

1. Lactoferrin treatment of *P. aeruginosa* biofilms results in destabilization of the bacterial cell membrane through iron chelation.
2. Combining lactoferrin and xylitol inhibits the ability of *P. aeruginosa* biofilms to respond to environmental iron restriction.

Access to iron is profoundly hard for bacteria when this combination is used.

Erythritol

Erythritol is an amazing sugar. For example, when it was given to children head-to-head with xylitol or sorbitol it was clearly superior. Here is a summary of the research:

Runnel writes: “Three-year consumption of erythritol-containing candies by initially 7- to 8-year old children was associated with reduced plaque growth, lower levels of plaque acetic acid and propionic acid, and reduced oral counts of mutans streptococci compared with the consumption of xylitol or sorbitol candies.”

In a similar way, Japanese researchers show highly advanced reasons for erythritol superiority over xylitol and sorbitol (Hashino). While this study is very dense, let me at least try to list the stunning findings:

1. By advanced confocal microscopic observations, the most effective sugar used to reduce *P. gingivalis* accumulation onto an *S. gordonii* substratum was erythritol, as compared with xylitol and sorbitol.
2. In addition, erythritol moderately suppressed *S. gordonii* monotypic biofilm formation.
3. To examine the inhibitory effects of erythritol, they analyzed the metabolomic profiles of erythritol-treated *P. gingivalis* and *S. gordonii* cells. Metabolome analyses showed that a number of critical bacteria chemicals were decreased by erythritol.
4. Next, metabolites of erythritol- and sorbitol-treated cells were examined. Erythritol significantly decreased the levels of *P. gingivalis* dipeptides. They tended to be increased by sorbitol.

Amazingly, it appears erythritol has inhibitory effects on two diverse species with biofilms, and it acts by at least five very distinct mechanisms.

Dowd reported that biofilm formation was completely inhibited in a standard wound approach by 10% erythritol in either of the two San-

Does Magnesium Deprivation Hinder Biofilms?

Before we decide to remove an element that is used in vast numbers of important enzymes, we have to have a foundation. First, in some basic physiology texts, calcium displaces magnesium inside human cells. My impression of this research is that suboptimal magnesium increases systemic inflammation, vascular death such as heart attacks, and cancer. Dibaba shows that the higher the magnesium in diet the lower C-reactive protein. This protein is associated with inflammation. If you lower inflammation you decrease deaths.

Qu pooled studies of approximately a half a million people to examine the results. The greatest risk reduction occurred when magnesium intake increased from 150 to 400 mg/day. A significant inverse association was found between dietary magnesium intake and total cardiovascular events. Serum magnesium concentrations are linearly and inversely associated with the risk of cardiovascular troubles such as heart attacks and brain strokes. Since magnesium is poorly absorbed even when chelated to an amino acid, it is perhaps useful to note the useful dose was 400 mg, when compared to minimal benefit from 150 mg orally.

Del Gobbo also examined vast studies and wrote: “Clinical hypomagnesemia and experimental restriction of dietary magnesium increase cardiac arrhythmias.” Deadly ischemic heart disease, in which a person dies due to poorly oxygenated blood reaching the entire heart, was more common in those with no magnesium supplementation or very low oral magnesium dosing. Simply, “circulating and dietary magnesium are inversely associated with [cardiovascular disease].” Further, Qu shows, in another study, a significant drop in intestinal cancers with a reasonable magnesium intake. While we may not know the mechanism for these useful findings, they are not felt to be due to chance.

Song and Leff clearly show why a small number of scientists and physicians have pondered lowering human magnesium Mg^{2+} levels. They remind us that Mg^{2+} can influence bacterial adhesion, which is part of biofilm process. In their study, the bacterium *Pseudomonas fluorescens* was used to investigate the influence of Mg^{2+} on biofilm growth.

Nitroxoline

We are not going to spend significant time on this fifty year-old antibiotic because it is not used in many countries, and it is a quinolone, and quinolones all seem to have serious risk of tendon damage. For example, it is possible nitroxoline has the same risks as other quinolones (www.drugbank.ca/drugs/DB01422).

Quinolones easily enter cells and are often used to treat intracellular pathogens such as *Mycoplasma pneumoniae*.

The FDA has increased warnings regarding side effects since the drugs were first approved. I just want to focus on three side effects that might not be routine but are possible risks with many quinolones:

- **Damage to nerves outside the brain:** This could present as sensory nerve or muscle nerve injury causing paresthesias, hypoaesthesias, dysesthesias, and weakness. New pain, burning, tingling, numbness and/or weakness, or new decreased abilities to detect light touch, pain, temperature, position sense, vibratory sensation, and/or motor strength are basic nerve functions and show damage; these are reasons to stop taking the drug.
- **Tendon damage:** While some focus on the Achilles tendon, actual tears of tendons have occurred in the hand, the shoulder, the thigh, or other locations. Some are helped with surgery. Other patients feel the surgical or other treatment still leaves them with damage. It is believed by some that the use of prednisone and other cortical steroids meant to drop inflammation increases the risk of tendon damage. Perhaps this is especially true in older seniors. Surprisingly, tendons can rupture after the medication is stopped. Some have suggested that IV, transdermal or sublingual magnesium might decrease the risk, but I am not aware this hypothesis has been proven (Schaller).

Aspirin and NSAIDS

We have previously said it is best to see biofilms like a key, and using AIDS as an example, it was only after AZT in 1996 with **the arrival of protease inhibitors that those quickly dying, experienced a “Lazarus effect,” in which AIDS patients who looked to be ready to die recovered markedly in 30 days.** Medications used in AIDS are tough medications, even if they are miracles. Some may question offering a section on the tough medications aspirin and NSAIDS.

While we appreciate that aspirin and various other over the counter NSAIDS may not be optimal, perhaps due to concerns of liver, kidney or ulcer issues, we are discussing infections that invade and cannot be stopped by your body. You might need all the help you can get. So we offer some synthetic options here that may offer help against a top killing and disabling problem—**biofilm-protected** infections.

For example, fluconazole-resistant *Candida* is increasing worldwide. Fluconazole is also called Diflucan. Biofilms are one reason for a decreased effect in treatment. Aspirin, diclofenac, ketoprofen, tenoxicam, and ketorolac all undermined biofilms or their processes. They all reduced fungal adhesion, and increased biofilm detachment with low concentrations of anti-inflammatory agents. Microscopic examination confirmed the tested drugs had a significant effect on reduction of *Candida* adhesion and biofilm development. The drugs also made fluconazole work more effectively against fluconazole-resistant *C. albicans* (Abdelmegeed).

Another useful way to involve aspirin is by teaming it up with the chelation chemical EDTA. Both aspirin and EDTA possess broad antimicrobial activity for biofilm cultures. Aspirin used for 24 hours was successful in eradicating *P. aeruginosa*, *E. coli* and *C. albicans* biofilms. Moreover, exposure to the Aspirin-EDTA combination completely destroyed bacterial biofilms after only four hours in simulation lab testing (Al-Bakri).

Azithromycin (Zithromax)

This medication is almost a household name and is known as the “Z-Pak” which contains brand name Zithromax pills that are still in use today. Despite being in use many years and used very routinely, this medication still has a strong use in addressing biofilms.

For example, Maezono showed that azithromycin was markedly superior compared to other routine antibiotics in killing gum infection bacteria. Specifically, azithromycin at **very low dosing** undermined four strains of *Porphyromonas gingivalis*. This determination involved the use of two fascinating techniques.

Azithromycin dropped the bacteria “gasoline” or ATP in the bacteria, which means the bacteria had decreased function or were dead. Cyanide kills humans in part due to dropping ATP levels—it is not a trivial substance. Further, the power of azithromycin was seen clearly with a confocal laser scanning microscope, which has the ability that the long name suggests—seeing the decreased amount of bacteria.

One of the most common hospital infection risks is MRSA; it causes a number of potentially deadly diseases. This “MRSA” simply means routine staph aureus is no longer able to be killed or it is resistant to methicillin, so it reproduces unchecked. Azithromycin is proposed as one solution to MRSA based partly on its biofilm defeating abilities at very low dosing.

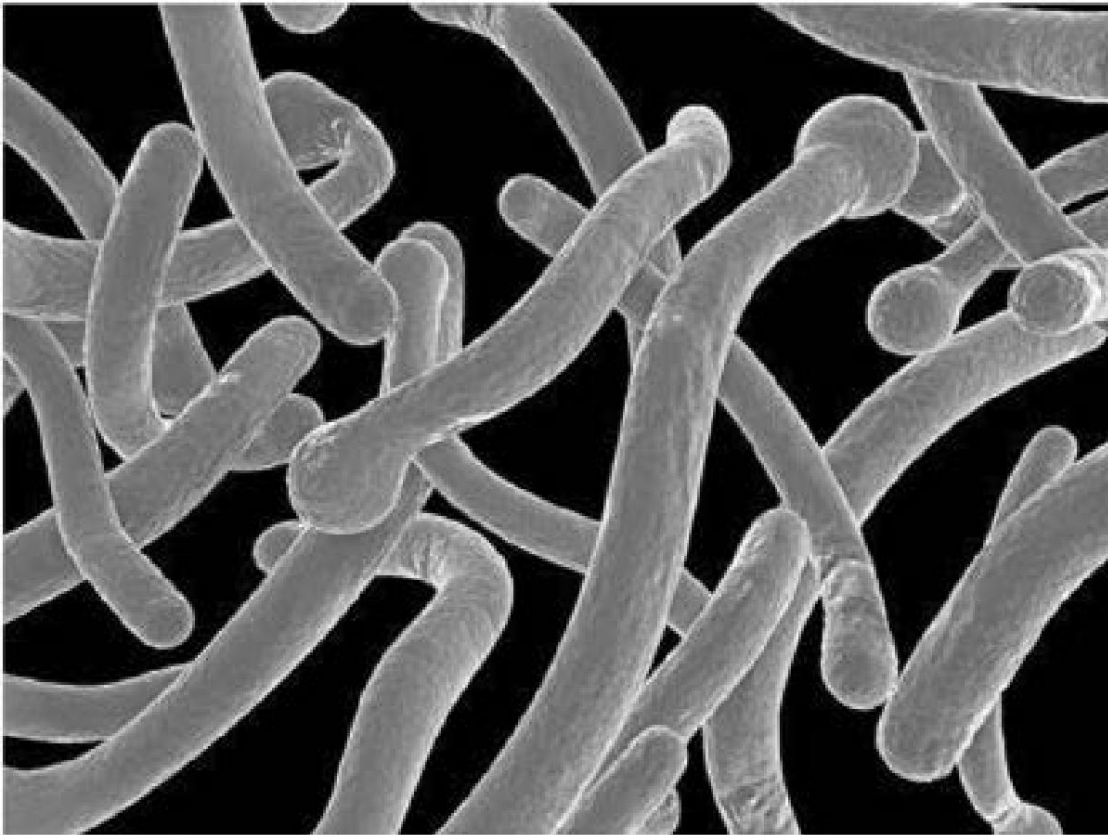
Gui shows that azithromycin was active against methicillin-resistant *Staphylococcus aureus* (MRSA) strains. It reduced the production of α -hemolysin and biofilm formation at very low “sub-inhibitory” concentrations. So, azithromycin may be useful in the treatment of α -hemolysin-producing and biofilm-forming MRSA infections.

Maezono H, Noiri Y, Asahi Y, Yamaguchi M, Yamamoto R, Izutani N, Azakami H, Ebisu S. Antibiofilm effects of azithromycin and erythromycin on *Porphyromonas gingivalis*. *Antimicrob Agents Chemother*. 2011 Dec;55(12):5887-92. Epub 2011 Sep 12. PMID:21911560

pilak

Ang pilak na paggamot na ginamit laban sa mga biofilm sa mga sugat ay malinaw na naging epektibo. Sa katunayan, matagumpay na nagamit ang isang 1% na silver cream upang gamutin at maiwasan ang mga impeksyon sa mga pasyenteng bum sa buong mundo.

Ang isang pagsusuri ng International Wound Infection Institute ay nagpapakita na ang data ay tumuturo pa rin sa pilak bilang isang nangungunang paggamot. Halimbawa, sinubukan ni Monteiro ang colloidal silver laban sa fungal biofilms. Ang konklusyon ng gawaing iyon ay napakatibay: hindi isinasaalang-alang ang mga konsentrasyon na ginamit sa pag-aaral, ang pilak ay nakakaapekto sa komposisyon ng matrix at istraktura ng mga biofilm ng Ca



3-dimensional na ginawang malapitan ng Candida albicans.

Cumanda and Biofilms

Dr. Eva Sapi and her colleagues found in their superior laboratory that cumanda had some mild killing effects on the Lyme bacteria, but more importantly for this book, Lyme **biofilm** communities grown in her lab were reduced 43% by this herb at low dosing. The dosing for a dynamic human or animal body was not explored or proposed by this researcher or any other researcher as of February 2014. Searching by its Latin and popular name did not yield any articles relevant for use on infections.

Finally, while Lyme disease is a common and disabling infection, it is hardly the only infectious agent in the many infections carried by Ixodes ticks. While this preliminary research is very useful, it is possible cumanda may have impact inside a body for Lyme and Bartonella treatment. More study is needed. I regret that we only examined cumanda for Bartonella and not Lyme.

Our conclusion was that cumunda hindered Bartonella more than Levofloxacin (levofloxacin), Zithromax (azithromycin), Rifabutin (mycobutin) and other proposed options. To determine treatment effect one needs to know **the indirect actions of Bartonella, Babesia, FL1953, Lyme, inflammation systems, etc. by lab analysis using different companies.**

Theophilus PA, Burugu D, Poururi A, Luecke DF, Sapi E. Effect of Medicinal Agents on the Different Forms of Borrelia burgdorferi Lyme disease or Lyme borreliosis is a tick-borne multisystemic disease caused by different species of Borrelia. <http://healthyats-nl.blogspot.com/2013/07/effect-of-medicinal-agents-stevia-and.html>

Erythromycin

Gomes found that erythromycin at low doses actually enhanced the growth of biofilms in *C. diphtheriae*. Penicillin acted the same way. Of further concern is that not only did these antibiotics increase biofilm formation but in this case they enhanced infections by strains of *C. diphtheriae*. Diphtheriae is a very dangerous infection without access to effective antibiotics. It is dangerous enough with good ones.

Returning to biofilm-promoted gum disease such as gingivitis, in the United States, over 50% of adults had gingivitis on an average of 3 to 4 teeth. Adult periodontitis, measured by the presence of periodontal pockets ≥ 4 mm, was found in about 30% of the population on an average of 3 to 4 teeth. Lost gum attachment to teeth of at least 3 mm was found in 40% of the population (Oliver).

The density of adherent *P. gingivalis* cells were significantly decreased by using erythromycin at very low dosing called “sub-MIC levels.” One strain was not affected by erythromycin. Finally, erythromycin was not effective for inhibition of *P. gingivalis* biofilm cells at very low dosing.

Erythromycin Key Findings

- Low doses actually grew some biofilms
- Penicillin also grew some biofilms
- It enhanced strains of dangerous *C. diphtheriae*
- Gum disease from *P. gingivalis* cells was much less sticky at very low dosing.
- Erythromycin was not effective for inhibition of *P. gingivalis* biofilm cells at very low dosing.

Contacting Dr. Schaller

Should you wish to talk to Dr. Schaller he offers individualized education consults, which can be arranged by calling 239-263-0133. Please leave all your phone numbers, a working email and a fax number. These consults are typically in 15 minute units and can last as long as you wish. All that is required is the completion of a short informed consent form.

If you would like a full diagnostic consult or to see Dr. Schaller as a patient, know he treats patients from all over the USA and from outside the country. He meets with you first and then does follow-up care with you by phone.

If you would like to fly in to see Dr. Schaller, his staff are very familiar with all the closest airports, and we have special hotel discounts.