

# COVID

- LPS endotoxemia - one of the biggest RF for COVID and disease
  - Probiotics - especially spore decrease LPS endotoxemia
  - IgG also helpful
  - Impairs Ace 2 receptors, drives inflammation (lung, gut)
- Viral load affects severity
- Biggest RF:
  - Obesity
  - Hypertension
  - Type II DM
  - CV disease
  - Cancer
  - Respiratory risk
  - Autoimmune conditions

# COVID 19

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- Viruses are fragments of RNA (not alive)
- They bind to a cell - pick a receptor
  - ACE2 receptor - primarily in the lung tissue
- Then activated by furin (enzyme) → activates proteins
  - Then replicates
- NLRP3 inflammasome - pro-inflammatory created to protect - but goes haywire and can become too much

# Ace 2 receptors

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- Produces vasodilation
  - So when this is destroyed -> less vasodilation
  - Get an increase in angiotensin 1 - imbalanced!
  - Many chronic conditions have low baseline of ACE 2 already
- Ace 2 receptors - Lungs, GI, heart, kidneys
- How to increase ACE 2
  - Exercise
  - Plant based-whole foods
  - Curcumin/resveratrol
  - ALA
  - Ginseng
  - Rosemary/oregano (use spices and herbs!)

# Furin inhibition - 3CL Protease

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- Andrographis
- Luteolin
  - Celery
  - Thyme
  - Green peppers
  - Chamomile
- Blocks entry into the cell
- 3CL
  - Elderberry (properly prepared)
  - Quercetin

# NLRP3 Inflammasome

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- Produces a cytokine storm
- Induces lung injury
- Aloe
- Bee propolis
- Curcumin
- Resveratrol
- Melatonin (3-20mg)

# Quercetin

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- Anti-viral
  - Decreases cellular entry and replication
- Innate immune system
- Anti-inflammatory
- Apples, onion, garlic, brassica (also helps estrogen and breast health)
- Synergistic with resveratrol
  - Decreases the NO pathway - leads to fibrosis
  - Helps in recovery
  - Antioxidant, anti-inflammatory
- Zinc ionophore - like hydroxychloroquine

# Other

- Green tea - hormone balance, anti-viral
- Sulforaphane - decreases NLRP3
- Omega-3 - decreases inflammation, improve insulin R
- PEA - pain - endocannabinoid system, immune support
  - 600 tid up to 3 weeks, 300 bid daily
- Pomegranate - antiviral, helps phase I,II detox, helps microbiome
  - 1 oz daily - helps plaques, 8 oz daily in prostate
- Melatonin - Anti-inflammatory, Antioxidant, lung protection significant!
  - Targets at least 3 mechanisms in COVID
  - 3-20mg - intense dreams means too high dose
- Zinc (need more if: poor diet, vegans/vegetarians, GI issues, heavy metals, reflux meds, increased copper or iron, etoh. C, D, A, NAC/glutathione