



# Mindful Nutrition:

Supporting Immune Function

# Fun Facts about the Immune System

adapted from Healthline.com



- A river of blood and lymph
  - 5 liters of blood and lymph containing the elements of the immune system passes throughout the body
- White (knight) blood cells
  - Like white knights slaying a dragon, white blood cells charge into battle to protect us against pathogens
  - 2 types
    - Phagocytes – travel through the body ingesting or absorbing pathogens
    - Lymphocytes – B cells, T cells, and natural killer cells – these cells create antibodies, kill viruses, infections, and cancer

- Fever and inflammation are good signs
  - Fever releases white blood cells, increases metabolism, and stops certain organisms from multiplying
  - Inflammation occurs when damaged cells release histamines. Redness, heat, pain, and swelling are the 4 signs of inflammation
- You need sleep for a healthy immune system
  - Less than 5 good hours per night is an invitation for colds, flu and infection
- Some sun is good
  - Your body needs vitamin D to ward off chronic disease
- Stress can damage your immune system
  - Cortisol is released but can only handle so much!



- Laughter helps our immune system – releases dopamine
- Germs can keep us healthy
  - Our immune system helps us adapt – once it is exposed to a foreign substance, it attacks it and remembers it. If it returns, your body knows what to do
- Allergies
  - Your body mistakes something harmless – like pollen, pet dander, or food – as a pathogen. An immune response is launched and allergy symptoms occur.
- Autoimmune disorders
  - Your immune system mistakenly attacks healthy tissue
  - These diseases are treated with drugs that suppress the immune system

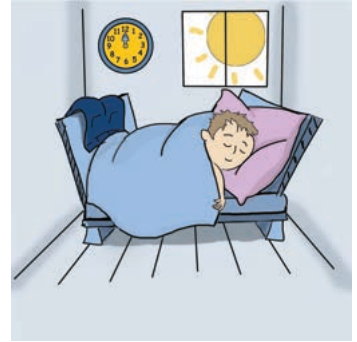


# A Strong Immune System

Nutrition



Sleep



Exercise/Movement



Supplements



# Nutrition – Immune Function Support



Eat nutrient-  
dense foods



Anti-  
inflammatory diet



Gut-health =  
immune support



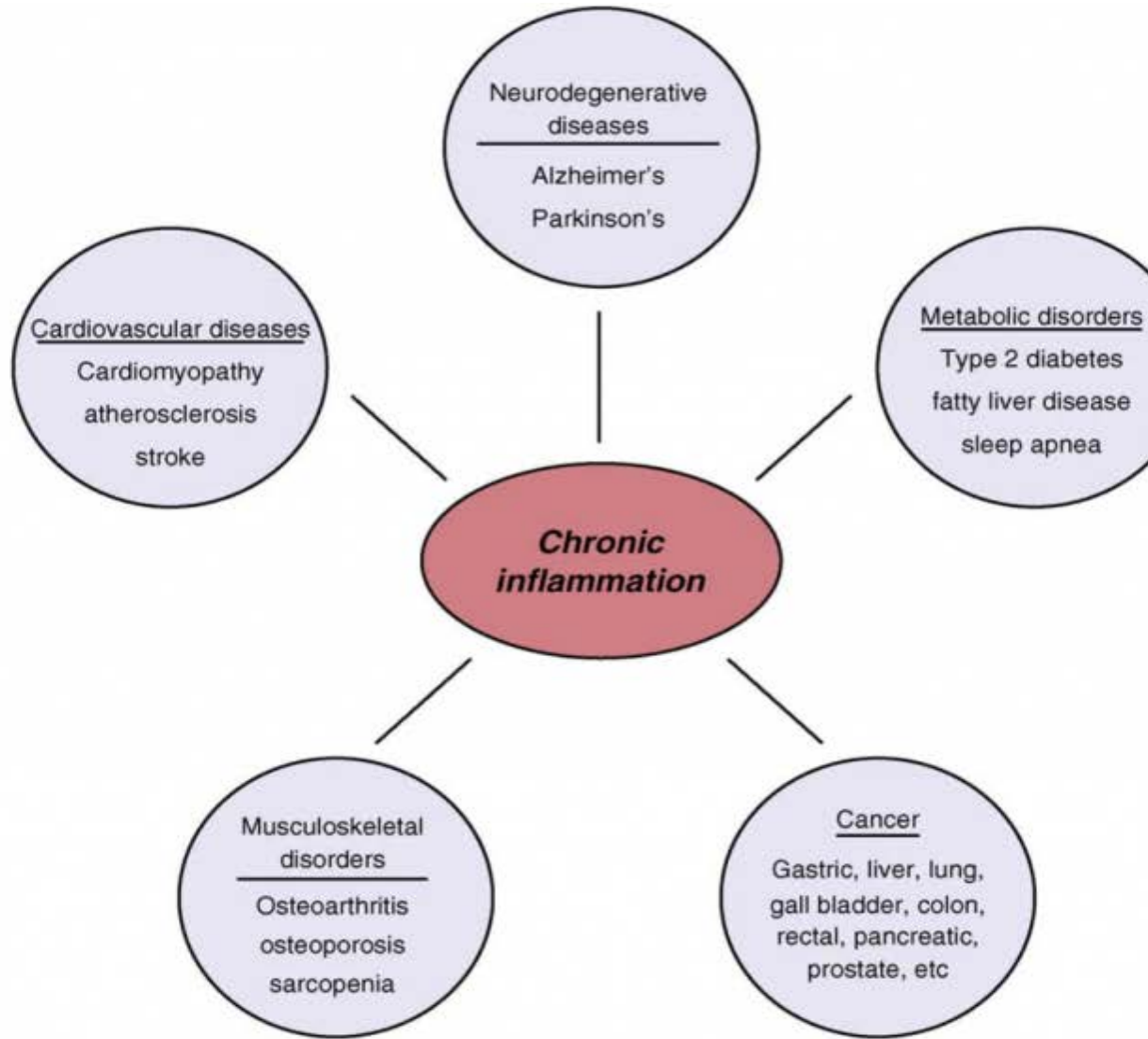
Eating to support  
telomerase



# Eat Nutrient-Dense Foods

- Nutrient dense foods - having a high vitamin/mineral content in relation to energy amount (calories)
  - Examples: fruits, vegetables, whole grains, beans, nuts, and seeds
  - Complex carbs, lean proteins, healthy fats
- Empty calories – having high amount of energy (calories) in relation to vitamin/mineral content
  - Examples: soft drinks, cookies, cakes, candy, chips, fast-food, trans fats, packaged/processed snacks





# Anti-inflammatory Diet

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- Chronic inflammation in our bodies – persistent low-level inflammation
- Inflammation can be triggered by a perceived internal threat – even when disease or injury is not present. Immune system starts attacking internal organs or healthy tissues and cells.
- Triggers: leaky gut caused by poor diet (low fiber, high sugar, saturated fats, alcohol, & processed foods), stress, smoking, and environmental toxins
- Chronic inflammation leads to chronic diseases
- Ask for CRP (C-Reactive Protein) blood test from your PCP.



# Eat This:

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- Omega-3 fats – fatty fish, flaxseed, chia seeds, walnuts, enriched eggs
- Lean meats and fish
- Fruits and vegetables – especially tomatoes, berries, cherries, oranges, green leafy vegetables
- Olive oil
- Nuts and seeds
- Whole grains



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# Not This:



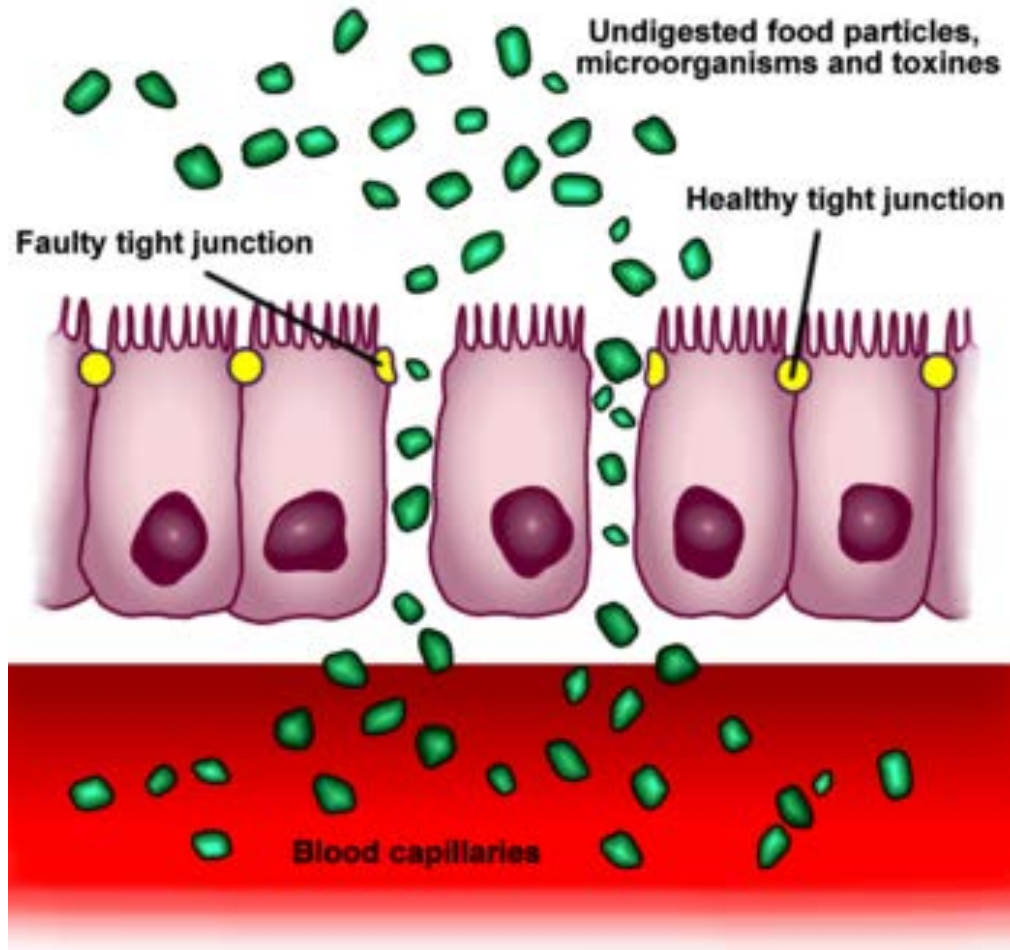
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- Highly processed carbs: chips and crackers, cakes, cookies, white bread, white pasta
- Processed meats
- Sugar and high fructose corn syrup
- Trans fats and unhealthy plant oils
- Excessive alcohol



# Gut Health = Immune Support

- Leaky Gut: also known as increased intestinal permeability, is a digestive condition in which bacteria and toxins are able to “leak” through the intestinal wall.
- Causes inflammation and triggers the immune system



INFLAMMATORY, IMMUNOLOGICAL,  
AUTOIMMUNE AND NEOPLASTIC REACTIONS

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# Factors Leading to Leaky Gut

Excessive sugar  
intake

Long-term use  
of NSAIDs

Excess alcohol

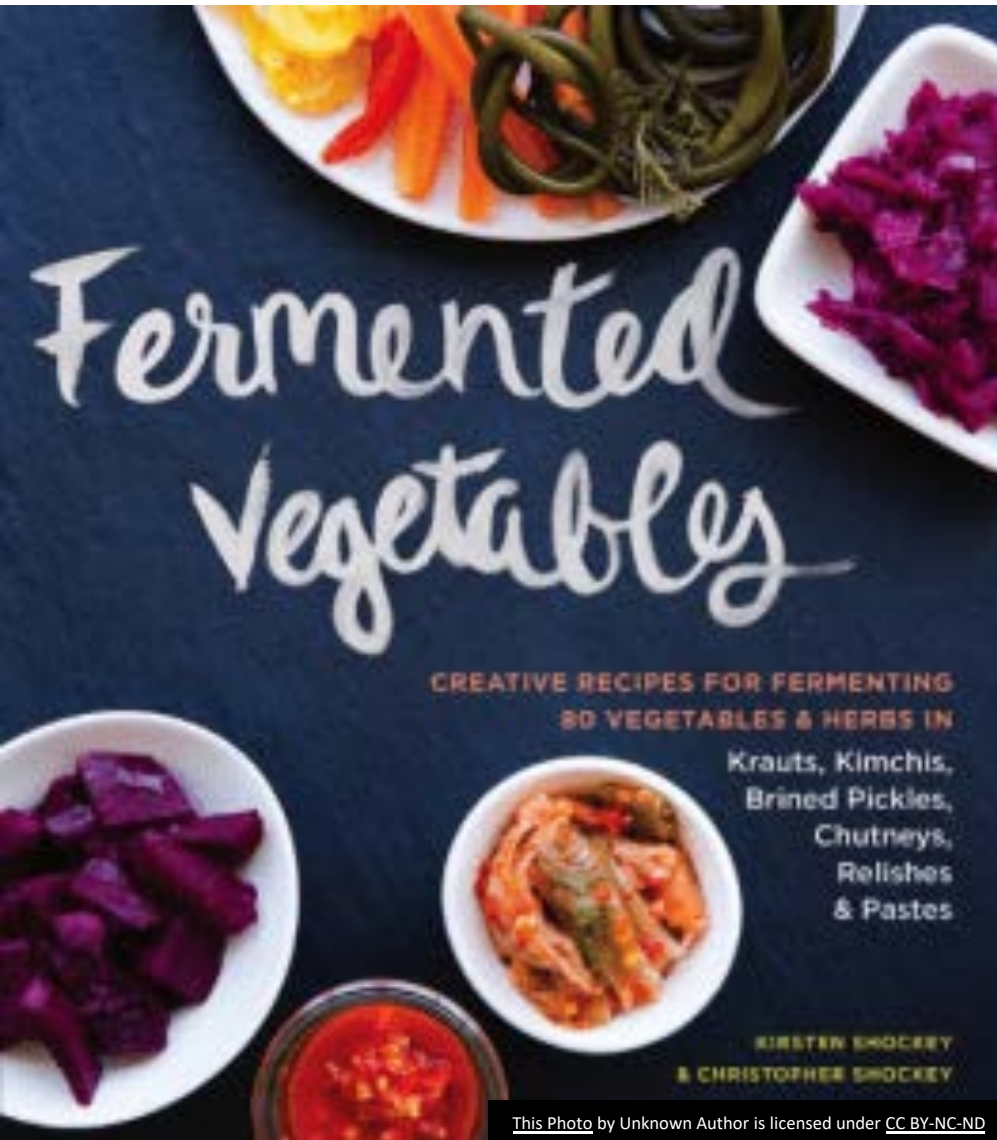
Nutrient  
deficiencies (Vit  
A, Vit D, Zinc)

Inflammation

Stress

Poor  
microbiome

Yeast  
overgrowth



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# How to Improve Gut Health

- Limit refined carbohydrates
- Eat fermented foods – kimchi, sauerkraut, kombucha, plain yogurt, kefir
- Eat high fiber foods
- Take a probiotic supplement
- Limit use of NSAIDS (aspirin, ibuprofen, naproxen, other prescriptions)

## Eating to Support Telomerase

- [\*The Telomere Effect\*](#) (2017) by Elissa Epel and Elizabeth Blackburn:
- Plant-based diet : vegetables, fruit, whole grains, nuts, legumes, seaweed, green tea
- Flax
- Spinach
- Mushrooms
- Berries
- Oats





# Sleep – Immune Function Support

- During sleep immune system releases proteins that are used to combat pathogens.
- Sleep deprivation = lower release of these proteins
- Melatonin is secreted by the pineal gland – stimulates the immune system, has anti-inflammatory properties, effect is opposite to stress
  - Antioxidant for the brain
- Optimum melatonin production: early to bed, early to rise!



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# Natural Sleep Enhancers

- **Minimize or avoid stimulants** – alcohol (3 hrs), caffeine (after noon – 2 pm), cold medicines, other medications, exercise
- **Reduce nighttime tension and anxiety** – watching the news, reading exciting books, paying bills, looking at the stock market, journal your thoughts , yoga, meditation, a bedtime ritual
- **Sleep planning** – train your biological clock the same time every day, prep for bed 30 min before, avoid late afternoon naps, avoid large meals before bed, hot bath – raising body temp helps induce sleep



# Natural Sleep Enhancers

- **Bedroom environment** – dark window shades or eye shades, use white noise machine, room not too hot or cold, avoid sleeping near electromagnetic field (at least 8 feet away) outlets, radios, cellphones, computers
- **Bedding/Pillows** – hypoallergenic pillows, body pillow, highest quality bed linens you can afford
- **Herbal and natural remedies** -
  - Teas: valerian, passion flower, lemon balm, chamomile
  - Tart cherry juice - naturally rich in melatonin, tryptophan, and anthocyanins
  - Omega 3 fatty acids



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# Exercise and Movement Immune Function Support

- **Improve your immune response**
  - Increase blood and lymph flow – circulate immune cells
  - Consistent exercise works best – 5+ days/week – study showed 40% decrease in upper respiratory tract infections over 12 week period
  - Aerobic-type exercise – walking, jogging, biking, yoga
  - Moderate strength training
  - "Housekeeping" for the body – everyday vs once a month



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# Exercise and Movement

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- **Decrease inflammation**

- Study showed lower inflammatory markers in older adults with higher levels of exercise
- Immune cells need to work harder with inflammation present
- Chronic inflammation is linked to many diseases... cardiovascular disease, diabetes, autoimmune diseases, cancer, and others
- Excessively prolonged and intense exercise has been linked to an increase in inflammation and oxidative stress – keep it moderate!



# Supplements – Immune Function Support

- Most recent studies
- Vitamin D
- Vitamin C



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# Vitamin D

- Recent studies:
- Reduced ICU admission for Covid19 from 50% to 2%
- Low levels of Vit D associated with worse outcomes of Covid19
- Risk of testing positive for Covid19 greater with Vit D deficiency



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# The big-3 micronutrients linked to immune system function

- Vitamin C - RDA 75 – 90 mg/day
  - Citrus, bell peppers, kiwi fruit, broccoli, strawberries, Brussels sprouts, tomatoes, cantaloupe, dark leafy greens
- Vitamin D – RDA 600 – 800 IU/day
  - Sun exposure
  - Fish (salmon, trout, sardines, tuna), cod liver oil, mushrooms, fortified milks
  - Supplement may be needed
- Zinc – RDA 8 – 11 mg/day
  - Oysters, red meat and poultry, crab, lobster, beans, nuts, pumpkin seeds





# Botanicals for acute respiratory infection (colds, flu, and other viruses)

- Chamomile
- Echinacea
- Elderberry (*sambucus nigra*)
- Garlic (*allium sativum*) – use fresh in cooking
- Ginger – use in cooking or as a tea with honey
- Lemon
- Peppermint



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# Recipe of the Week – Turkey Sweet Potato Chili

- Ingredients (makes 10 - 12 servings)
  - Olive oil – 1 Tbsp
  - Sweet potatoes – 3 cups/21 ounces/approx. 3 – 4 diced
  - Onion - 1 large diced
  - Garlic – 3 cloves
  - Red pepper - 1 chopped
  - Jalapeno – 1 finely chopped
  - Zucchini – 2 medium chopped
  - Kale – 1 large bunch
  - Turkey – ground lean – 1 lb
  - Cumin – 1 Tbsp
  - Turmeric – 1 Tbsp
  - Salt – 2 tsp + black pepper – to taste
  - Black beans – 2 15 oz cans, rinsed and drained
  - Crushed tomatoes – 1 28 oz can
  - Diced fire roasted tomatoes – 2 15 oz cans
  - Lemon - juiced
  - Chicken broth – 4 cups
  - Condiments: avocado, tortilla chips



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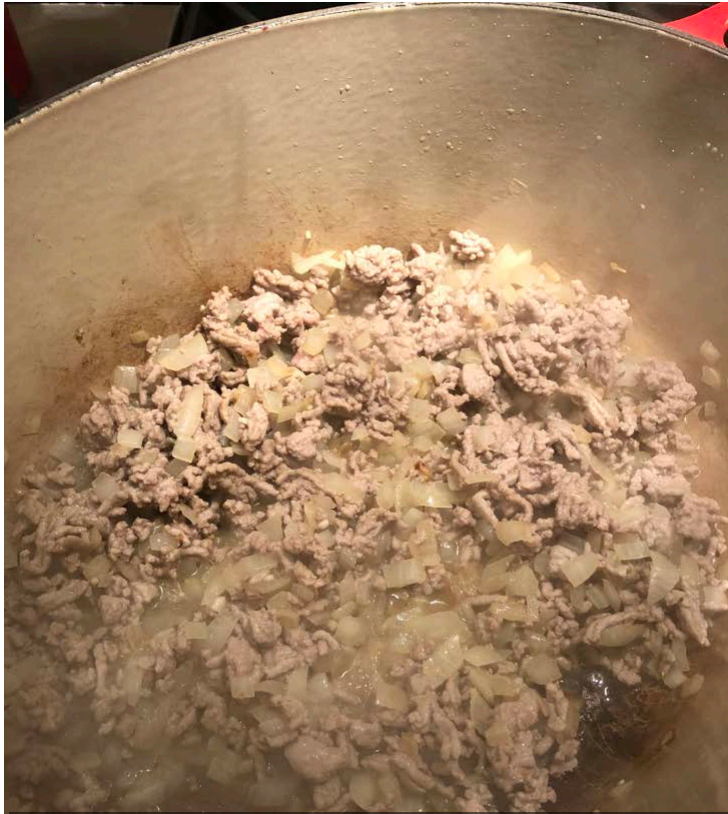












Saute until turkey cooked through – about 5 – 7 minutes

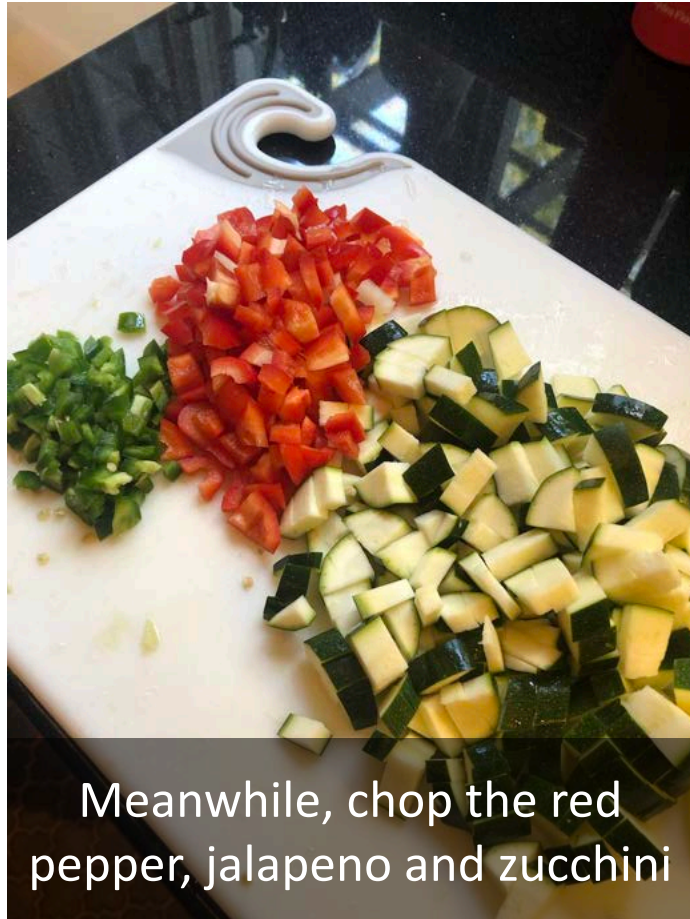


Heat oil over medium heat. (Heat the pot first, then add oil). Saute onion and garlic until translucent

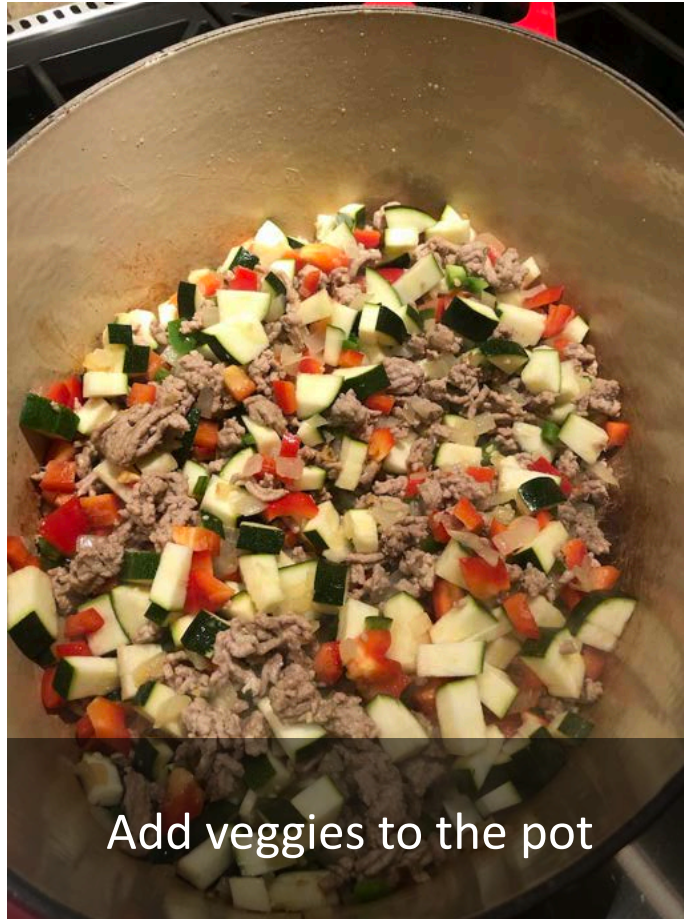


Add turkey, break into small pieces. Add  $\frac{1}{2}$  of salt and pepper

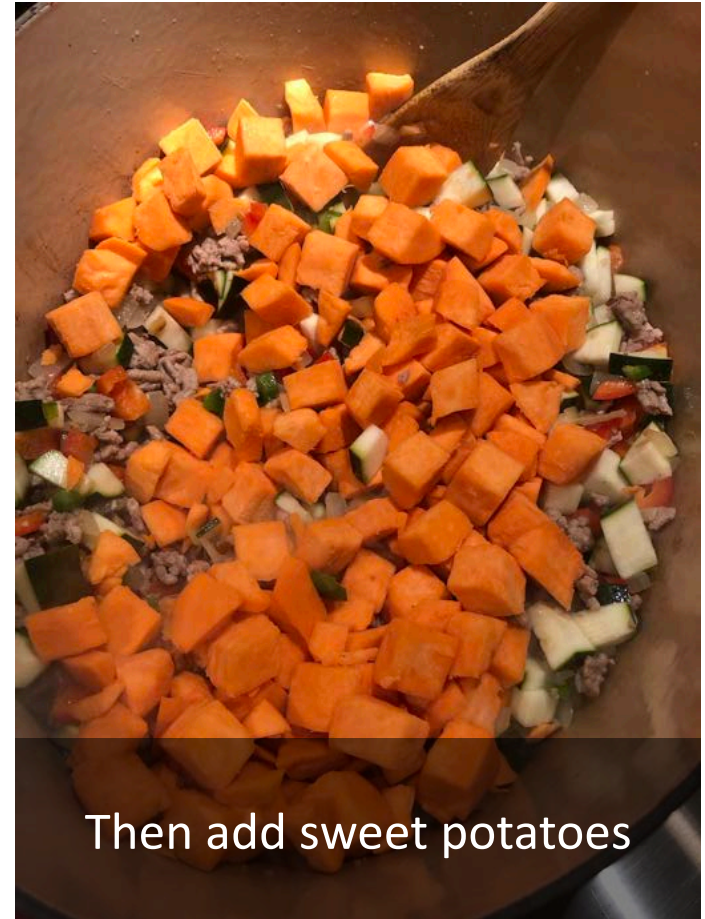




Meanwhile, chop the red pepper, jalapeno and zucchini



Add veggies to the pot



Then add sweet potatoes





Add beans, crushed tomatoes and diced tomatoes



Then add chicken broth. Cover and let simmer on low heat for 45 min – 1 hour.





Time to chop the kale!





Add chopped kale to chili, stir and let simmer for 10 more minutes





Final touch: squeeze lemon juice into  
pot and stir



Serve chili garnished with avocado  
slices and tortilla chips

# References:

- Olsen, E. (2018, November 28). Can lack of sleep make you sick? Retrieved October 05, 2020, from <https://www.mayoclinic.org/diseases-conditions/insomnia/expert-answers/lack-of-sleep/faq-20057757>
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