

INTEGRATIVE ONCOLOGY 2023 PATIENT FAMILY GATHERING

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MAYO CLINIC



BIOMED VALLEY™
DISCOVERIES



MAYO CLINIC
LABORATORIES





School of Continuous
Professional Development

INTEGRATIVE ONCOLOGY

ECD PATIENT AND FAMILY GATHERING
APRIL 2023

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DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIP(S) WITH INDUSTRY

- Nothing to disclose

REFERENCES TO OFF-LABEL USAGE(S) OF PHARMACEUTICALS OR INSTRUMENTS

- Nothing to disclose

DEFINITION: INTEGRATIVE ONCOLOGY

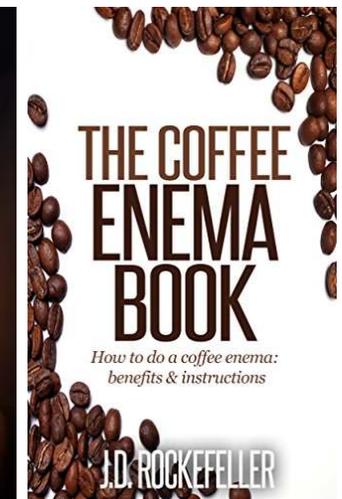
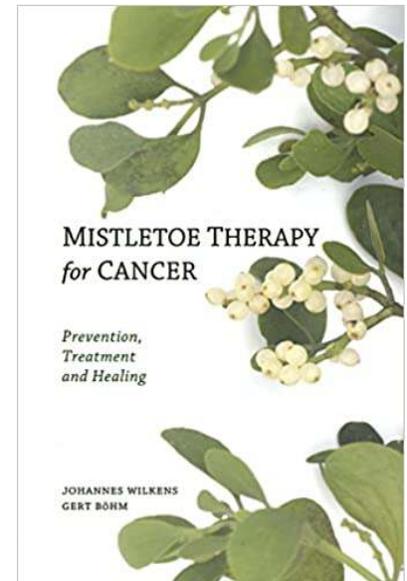
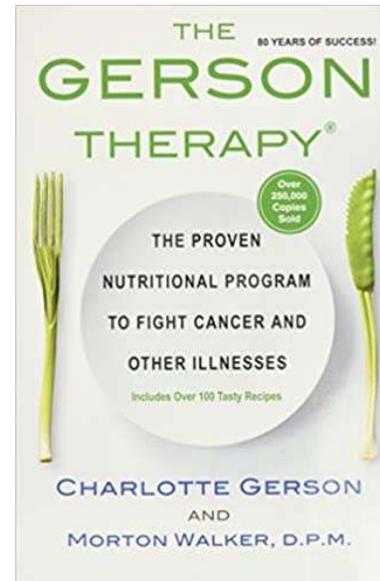
Integrative oncology is a patient-centered, evidence-informed field of cancer care

- Utilizes mind and body practices, natural products, and/or lifestyle modifications from different traditions alongside conventional cancer treatment

Patients become active participants **before, during and beyond cancer treatment**

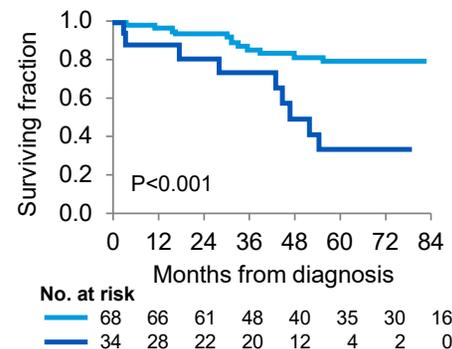
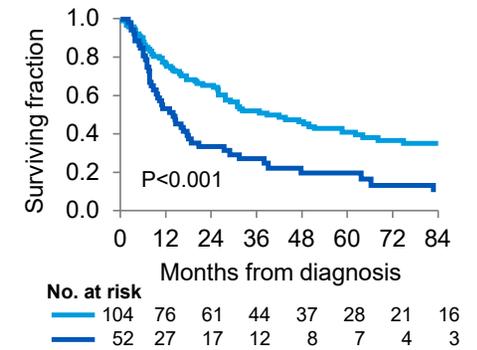
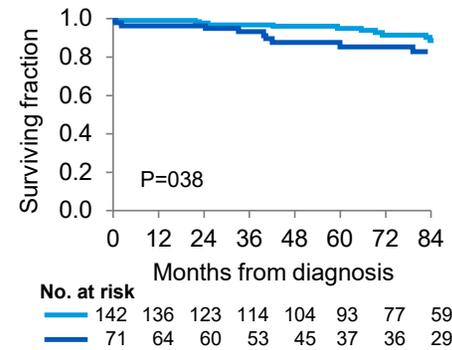
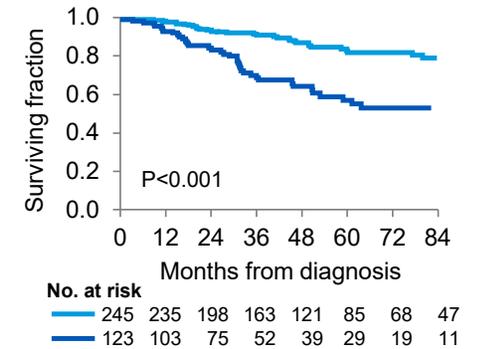
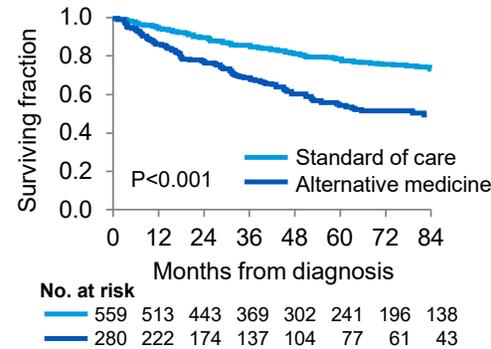
INTEGRATIVE/COMPLEMENTARY VS ALTERNATIVE

- IV hydrogen peroxide
- Insulin-potentiated chemotherapy
- Hyperbaric oxygen therapy
- IV Vitamin C
- Ozone



ALTERNATIVE MED VS STANDARD TREATMENT

- 281 patients with ostensibly curable, early-stage breast, prostate, lung, and colorectal cancers chose alt therapy
- 560 subjects with similar diagnoses who chose conventional treatment
- Subjects choosing only unproven therapies were 2.5 times more likely to die than those who availed themselves of recommended chemotherapy, radiotherapy, surgery, and/or hormone therapy



Redrawn from: JAMA 2018



INTEGRATIVE ONCOLOGY CLINIC

Basics

- Yoga
- Acupuncture
- Exercise
- Stress reduction
- Massage
- Aromatherapy
- Music therapy

What we do

- Assess each patient- diet, supplements, sleep, stress, exercise, environment, GI issues, pain, other symptoms
- Symptom management
- Assess supplement safety
- Personalized nutrition/exercise plan
- Focus on improving sleep
- Stress reduction
- Labs



ACS SURVIVORSHIP RECOMMENDATIONS, 2022

1. Achieve and maintain a **healthy body weight** throughout life
 - Keep body weight within the healthy range and avoid weight gain in adult life
2. Be **physically active**
 - Adults should engage in 150-300 min of moderate-intensity physical activity per wk (or 75-150 min of vigorous-intensity physical activity); striving to meet or exceed the upper limit of 300 min is ideal
 - Children and adolescents should engage in at least 1 h of moderate-intensity or vigorous-intensity activity each d
 - **Move more and sit less**
3. **Follow a healthy eating pattern** at all ages
 - A healthy eating pattern includes:
 - Foods that are high in nutrients in amounts that help achieve and maintain a healthy body weight;
 - **A variety of vegetables**—dark green, red, and orange, fiber-rich legumes (beans and peas), and others;
 - Fruits, especially whole fruits with a variety of colors;
 - Whole grains
 - A healthy eating pattern limits or does not include:
 - Red and processed meats;
 - Sugar-sweetened beverages;
 - Highly processed foods and refined grain products.
4. **It is best not to drink alcohol.**
 - People who do choose to drink alcohol should limit their consumption to no more than 1 drink per d for women and 2 drinks per d for men

Rock, 2022

EXERCISE: REDUCES RECURRENCE AND DEATH



Exercise:
150 min/week
moderate exercise

- More likely better, increased fat loss
- 2x/ week strength training



Exercise/Yoga
helps fatigue



Exercise helps with AI
arthralgia



Most patients are not
meeting requirements

EXERCISE DURING CHEMOTHERAPY

- Cochrane review 32 studies, 2626 patients undergoing adjuvant therapy using different exercise regimens
- Overall exercise:
 - **Improves fatigue and cognitive function**
 - **Improves physical fitness**
 - **Improves QOL**
- Need to define the optimal routine

SLEEP

- Circadian rhythm dysfunction “probably carcinogenic”
- 20-70% BC patients report insomnia
 - During and after treatment
 - **Multifactorial causes**- meds/steroids, pain, nausea, psychological distress; consider sleep study
- Often sleep problems **co-exist** with depression, fatigue, anxiety, and pain
- Leads to decreased QOL

SLEEP: TREATMENTS

- **CBT (category I):** Increases sleep efficacy, even 12 months after course, also decreases anxiety/ depression and increases QOL
- CBT-I addresses cognitive and behavioral factors that maintain insomnia using core treatment components of sleep restriction (shortening time spent in bed to consolidate sleep)
 - Stimulus control (restricting bedroom activities to create an association between the bed and sleep)
 - Sleep hygiene (development of good sleep habits- routine bedtime, dark room, no electronics, bright light in the morning)
 - Cognitive therapy (changing dysfunctional beliefs about sleep)
 - Relaxation therapy
- Online courses- SHUTi
- Acupuncture, yoga, exercise
- MBSR
- Melatonin, cannabis
- Bright light therapy

Savard, 2005; Zhou, 2019

SUPPLEMENTS



MAYO IO CLINIC

- 91% were taking dietary supplements, average number 5.5 (0-20), most were on some cancer therapy
- Most common DS patients reported taking (%): Vit D (52), Vit C (41), MVI (34), probiotic (27), B Vit (26), Ca (20), zinc (20), fish oil (18), cannabis (18), mushrooms (18), turmeric (17), mag (15), melatonin (14), biotin (11), coq10 (7), iron (8), VIT E (5), glucosamine (5)
- **35% of patients- recommended DS or other therapies discontinuation**
- Number of patients using alternative therapies beyond DS: IV Vitamin C (5), RSO (4), extreme diets (4), mistletoe (2), re-purposed meds (2); one each using hyperbaric O2, ozone, homeopathic, ayurvedic, insulin potentiated chemo, miracle mineral cure, chelation, low dose naltrexone

Reason for Recommending D/C supplement	%
Potential for toxicity	51.4 %
Potential to decrease the efficacy of treatment	34.3%
Interaction with medications or treatment	14.3 %

D'Andre, Supp Care Cancer 2022

GNC WOMEN'S MVI

- Iron 18mg
- Vit A 5000 IU
- B12 50 mcg
- Vit E 30 IU
- Other anti-oxidants

CODE 178912

BPG

Directions: As a dietary supplement, take two caplets daily with food.

Supplement Facts		
Serving Size Two Caplets		
Servings Per Container 45		
Amount Per Serving		% Daily Value
Vitamin A (50% as beta-Carotene; 50% as Retinyl Acetate)	5000 IU	100%
Vitamin C (as Ascorbic Acid & Calcium Ascorbate)	200 mg	333%
Vitamin D (as Cholecalciferol D-3)	1600 IU	400%
Vitamin E (as Natural d-alpha Tocopheryl Acetate)	30 IU	100%
Vitamin K (as Phytonadione)	80 mcg	100%
Thiamin (Vitamin B-1)(as Thiamin Mononitrate)	50 mg	3333%
Riboflavin (Vitamin B-2)	50 mg	2941%
Niacin (as Niacinamide & Niacin)	50 mg	250%
Vitamin B-6 (as Pyridoxine Hydrochloride)	50 mg	2500%
Folic Acid	400 mcg	100%
Vitamin B-12 (as Cyanocobalamin)	50 mcg	833%
Biotin	300 mcg	100%
Pantothenic Acid (as Calcium d-Pantothenate)	50 mg	500%
Calcium (as Calcium Carbonate)	500 mg	50%
Iron (as Ferrous Fumarate)	18 mg	100%
Iodine (as Potassium Iodide)	150 mcg	100%
Magnesium (as Magnesium Oxide)	100 mg	25%
Zinc (as Zinc Oxide)	15 mg	100%
Selenium (as L-Selenomethionine)	200 mcg	286%
Copper (as Cupric Oxide)	2 mg	100%
Manganese (as Manganese Sulfate)	2 mg	100%
Chromium (as Hydrolyzed Protein Chelate)	120 mcg	100%
Molybdenum (as Sodium Molybdate)	75 mcg	100%
Energy & Metabolism Blend	119 mg	*
Caffeine Anhydrous, Capsimax™ Capsicum Seed Extract, Black Pepper Extract		
Green Tea Leaves Extract (<i>Camellia sinensis</i>)	40 mg	*
alpha-Lipoic Acid	25 mg	*
Choline (as Choline Bitartrate)	10 mg	*
Inositol	10 mg	*
Silica (as Silicon Dioxide)	4 mg	*
Boron (as Hydrolyzed Protein Chelate)	2 mg	*
Lutemax 2020™ Lutein	950 mcg	*
Lycopene	950 mcg	*
Zeaxanthin (as Zeaxanthin Isomers)	190 mcg	*
Astaxanthin	50 mcg	*
Vanadium (as Sodium Metavanadate)	10 mcg	*

* Daily Value not established.

Other Ingredients: Cellulose, Titanium Dioxide (Natural Mineral Whitener), Natural Vanilla Flavor, Vegetable Acetoglycerides, Riboflavin, Sucralose.

CONTAINS: Fish and Soybeans.

Each serving supplies approximately 100 mg of caffeine.

WARNING: Accidental overdose of iron-containing products is a leading cause of fatal poisoning in children under 6. Keep this product out of reach of children. In case of accidental overdose, call a doctor or poison control center immediately.

INTERACTIONS

- Many herbals interact with targeted therapies
- Both processed through liver mostly
- Can either elevate or decrease the level of the targeted drug
- Increase side effects, or reduce effectiveness
- Always check with care team or pharmacist about supplement interactions

IMMUNOTHERAPY

MDA- looked at probiotic/antibiotic use and diet study in melanoma patients undergoing immunotherapy

Lower response rates seen with poor diet, *probiotics*/ABX

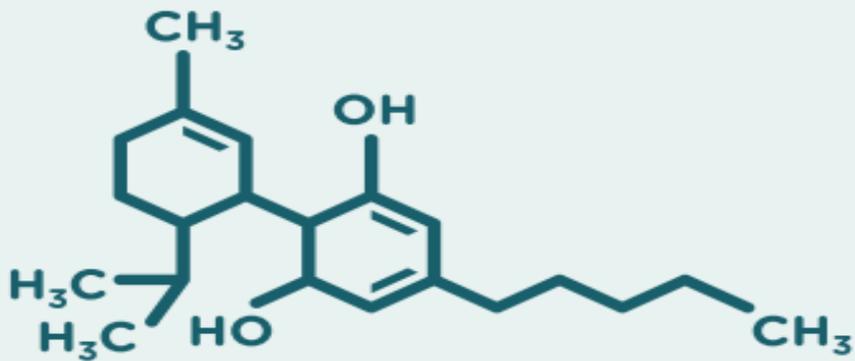
High fiber plant-based diet had improved response rates- 5X more likely to respond to anti PD-1 therapy

The best way to improve microbial diversity in the gut is to eat a **WIDE VARIETY** of plants and high fiber foods

Ongoing MDA study: regular diet vs 50g

Spencer et al, 2019

CANNABINOIDS

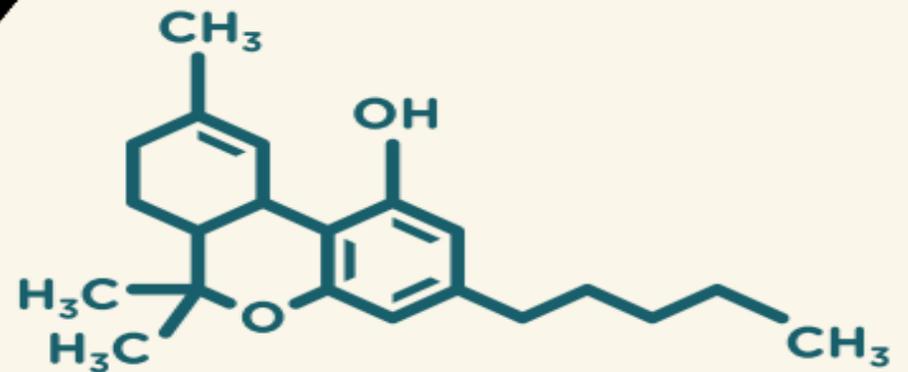


CBD

CANNABIDIOL

THC

TETRAHYDROCANNABINOL



CANNABIS

- Some evidence that cannabis can help with:
 - **Pain**
 - **Nausea**
 - **Poor appetite**
 - **Neuropathic pain**
 - **Poor sleep associated with symptoms**



HEMP VS. CANNABIS

HEMP

- Stalk/stem, fewer flowers
- Need to use a lot more product to extract cannabinoids
- More contaminants
- Mislabeled (70%)
- “legal” online but state regs vary
- <.3% THC in CBD products

CANNABIS

- More flowers, more cannabinoids
- More potent, more entourage effect
- Less contamination
- COA available at dispensary
- Schedule 1

DELTA 8 THC

Synthesized from
hemp-derived
cannabidiol, not
regulated

Adverse events
reported, often in
children

Psychoactive
(less potent than
Delta 9 THC)

Harmful products
used in
production

FDA has issued
warnings against
use

HOW DO YOU TAKE CANNABIS?



Inhaled- fastest onset

Juice- no psychoactive effect- Raw/Acid form of THC

Oils (full extract cannabis oil FECO)

- Rick Simpson oil (high THC)
- Ethanol or C02 extraction

Tinctures- used sublingual, 15 min to onset or longer (can be similar to oral onset)

- Alcohol or glycerin extraction

Edibles- absorption over 1-2 hours

Suppositories-local effect; controversial, may not really be absorbed

Topical

Transdermal patches

INTERACTIONS

ALWAYS CHECK WITH DOCTOR OR PHARMACIST TO SEE IF MEDICATIONS INTERACT

- **Warfarin (Coumadin)**
- **Seizure medications- clobazam, topimarate**
- Statin cholesterol medications (especially at maximum dosages)
- Erythromycin
- Azole antifungals
- Losartan, diltiazem
- Cyclosporine

DRUG INTERACTIONS

- **Cannabinoid-opioid interactions**
 - Synergistic- may need less opioids
 - No addition to opioid decrease respiratory centers in the brain
- **Alcohol and benzodiazepines**
 - potentiation of sedation
- **Anticholinergic drugs may increase psychoactive side effects**
 - Benadryl, Dramamine, Spiriva, Atrovent, Wellbutrin, Cogentin, and others.
- **Stimulants-** may increase paranoia and psychiatric side effects in others

MN MEDICINAL CANNABIS INDICATIONS

Cancer indications

- **Severe/chronic cancer-associated pain**
- **Severe Nausea/vomiting**
- **Cachexia/severe wasting**

Multiple other non-cancer indications

- **Chronic pain**
- **PTSD**
- **Spasticity**
- **Seizures**
- **Glaucoma**
- **ALS**
- **Alzheimer's**
- **HIV/AIDS**
- **IBD**
- **Sleep apnea**
- **Autism**
- **Sickle cell**

TOPICAL CANNABINOIDS: CIPN, OTHER SKIN ISSUES

- Topical cannabis
 - Reported 22 patients with CIPN responding to CBD +/- THC creams
 - 4 patients did not respond, one with transient increase in CIPN
 - Effect was generally within minutes and lasted few hours
- **MNCCTN/Mayo clinical trial- currently open**
 - **CBD cream BID vs. placebo cream x 2 weeks for established CIPN**
 - **Randomized cross over**
- Topicals also reported to help with other inflammatory skin conditions
- **Pilot study: CBD cream to prevent radiation dermatitis (Dr. Corbin, D'Andre)**

D'Andre, 2021

CANCER TREATMENT?

Animal models- THC/CBD

Depends on cancer type/receptors/cannabinoid

Very little human data but **one of the main reasons patients seek out cannabis**

Brain tumor studies ongoing

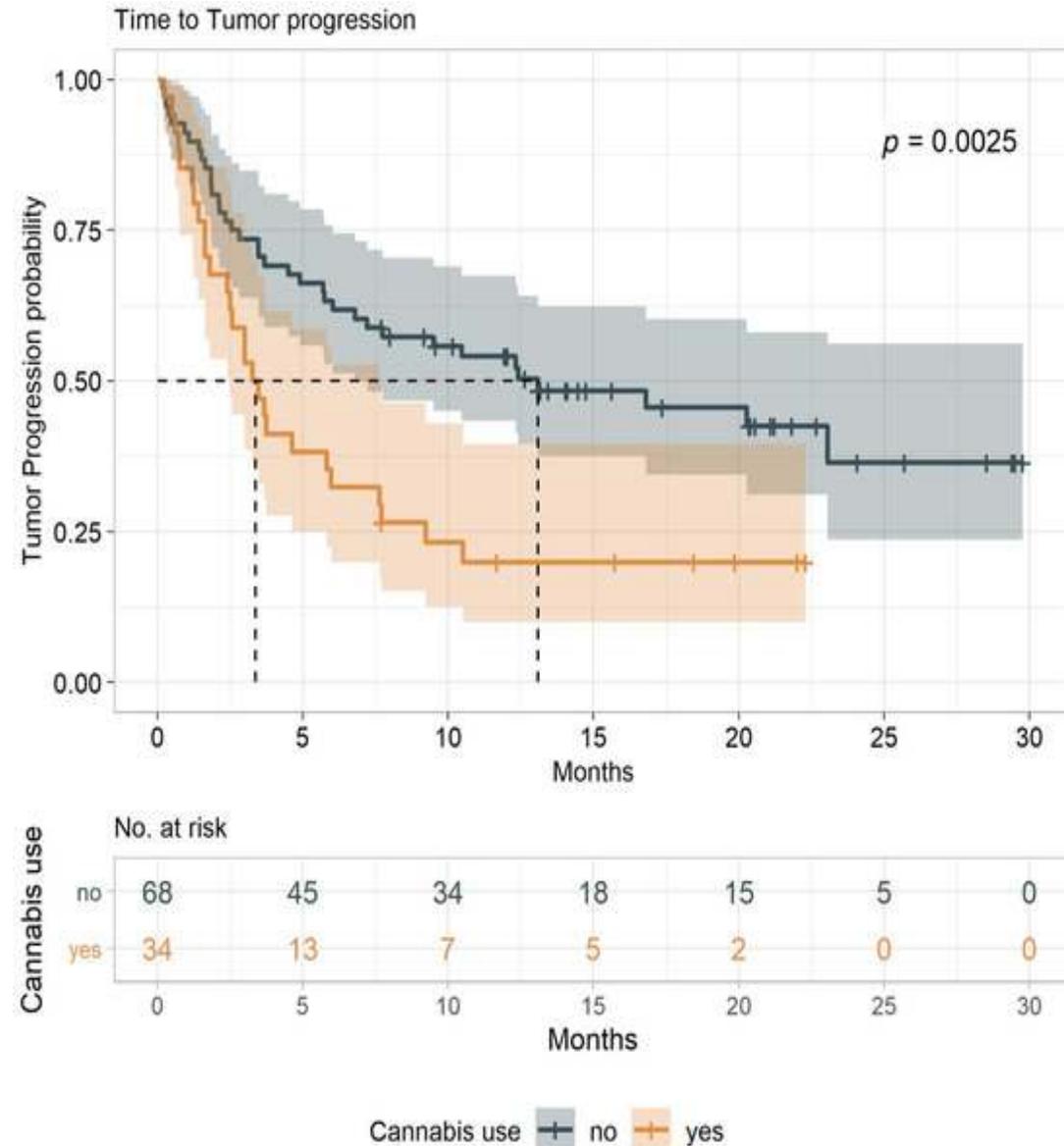


IMMUNOTHERAPY

- Bar Sela et al. (2020) Showed decreased TTP and decreased OS in patients using cannabis vs. not while on immunotherapy

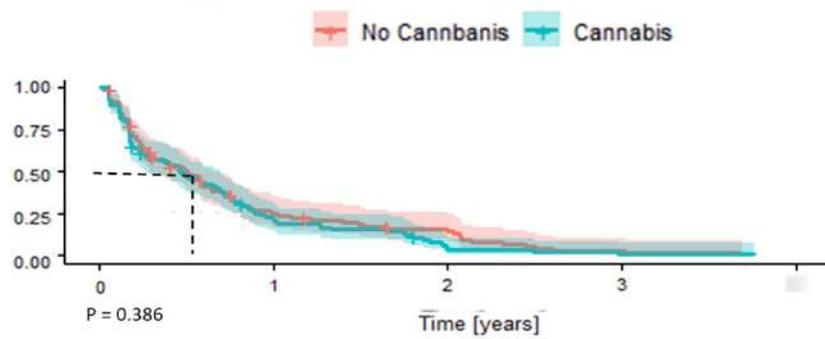
*Groups not well-balanced: more second line and liver mets in the cannabis group

*some immune modulating effect however- G v H disease, H/N cancer risk

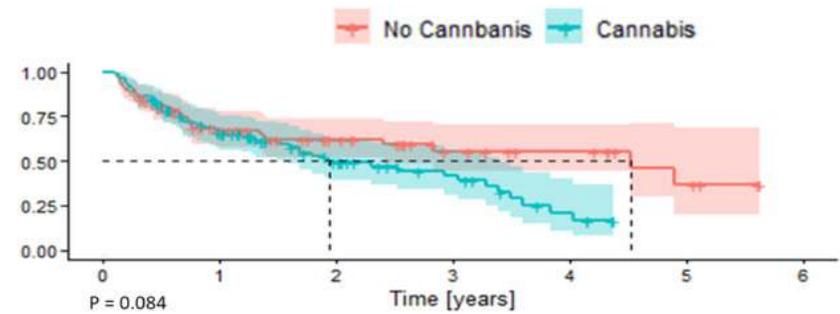


RETROSPECTIVE STUDY: 201 PATIENTS WITH LUNG CANCER ON IMMUNOTHERAPY

PFS



OS



Waissengrin et al, 2023

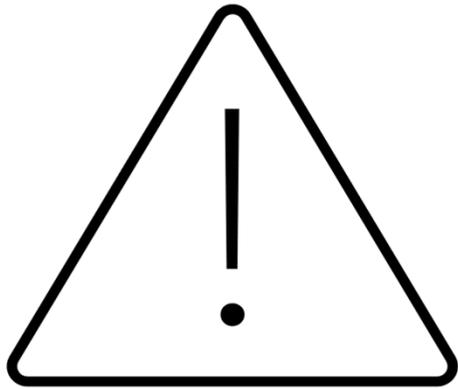
DOSING

- **START LOW AND SLOW:** THC is dose-limiting
- 1:1 THC/CBD is broadly useful and well tolerated for most
- Titrate slowly
 - Most start with **low dose at night-time (2.5 mg)**, slowly titrate (every few days)
 - Then add in a dose during the day if needed
 - Consider higher CBD/THC ratio during the day if unwanted THC side effects
 - Journal effects and stop when therapeutic effect achieved
- Dosing is highly variable; need to work with a provider
- Inhaled can be useful for breakthrough sx

SIDE EFFECTS

- **THC Side effects:** tachycardia, dizziness, psychoactive effect, dry mouth
 - Tolerance can develop
 - Addiction potential
 - Mild withdrawal can occur
- **CBD side effects:** seen more at high doses
 - Nausea, diarrhea, reduced appetite, elevated LFT's, fatigue

PRECAUTIONS



Avoid use in active cardiac patients

Fall risk in elderly especially first few weeks

Do not drive

Avoid use in pregnancy

Avoid use in those with psychiatric disorders or addiction

Avoid use in very immunocompromised (aspergillus)

Unknown effect in those on immunotherapy

**YOU CAN'T
SUPPLEMENT
YOUR WAY OUT
OF A BAD DIET**



DIETARY ISSUES

- * NOT ONE “ANTI-CANCER DIET”
- * EAT WHOLE FOODS
- * EAT LOTS OF VEGETABLES/FIBER
- * AVOID PROCESSED FOODS AND ADDED SUGAR
- * AVOID OR LIMIT ALCOHOL

Mediterranean diet:
A healthier approach to eating



PSYCHOSOCIAL INTERVENTIONS: IMPROVEMENTS IN PSYCHOSOCIAL FUNCTIONING

Cognitive and Behavioral cancer stress management

Supportive-Expressive Therapy

Meaning centered psychotherapy

Mindfulness based interventions

Acceptance and commitment therapy (ACT)

Behavioral lifestyle interventions

Yoga

Couples-focused interventions

Gudenkauf, 2018

MBCR

- Mayo class to start July- **“Mindfulness: Being Present with Cancer”**
- Cancer education center- Amy Kuth
 - 60 min with resources for continued practice
 - In person/virtual offerings

RESOURCES



Consumer labs, EWG.org:
Safe products/supplements



Univ AZ Integrative Medicine, SIO



MBSR online classes: UM, Sounds
True



MSK About Herbs



Natural Medicines Database



Healer.com- cannabis
training course, webinars