

**“Top 3”
Dietary Supplements**

6 October 2023
Dr. Ally




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Contacting the Presenter

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Disclosures and Conflicts

I am employed by the University of Nebraska College of Pharmacy and I receive a salary from them. I do research and scholarship as a part of my job and these are funded through a variety of sources.

I am the senior partner in BBfN, LLC; A Health and Safety Consulting Company

I am a consultant for 2 same-day Surgical Centers. These surgery centers pay a discounted hourly wage directly to an account in the Department of Pharmacy Practice at the University of Nebraska College of Pharmacy for this service and the Surgery Centers allow PharmD students to accompany me on consulting visits.

I am the Chairman of and serve on the Nebraska Medicaid Pharmacy and Therapeutics Committee. I am paid mileage to attend these meetings.

I do not accept speaker's funding directly from any member of the drug manufacturing or distribution industry. My programs may be indirectly funded by these entities, but I do not solicit such funding on behalf of anyone. Furthermore, it would be impossible to buy my opinions, you will recognize that as fact before the completion of this program.

My spouse, my parents and my adult children all participate in the stock market and own individual stocks. I do not know which stocks they own at any given time. I can assure this audience that no member of my family nor combination of members of my family own 1% or more of any publicly traded company.

Several members of my family belong to professions credentialed by the Nebraska Department of Health & Human Services or the corresponding Departments in other states including: Missouri, Kansas, Iowa, Oklahoma, and Colorado. My husband is a hydro-geologist, my father is a pharmacist, our daughter is a pharmacist, our son is a fitness trainer, my brother is an athletic trainer. Additionally, I have a maternal uncle who is a pharmacist and we have a daughter-in-law who is a nurse. At present the only member of my family other than me, who holds a health credential and lives in my home is my husband.

I have filed the necessary paperwork with the University of Nebraska and the State of Nebraska to meet the Sunshine Law. You are welcome to access my information on their respective web-sites. My full and legal name is: Allison Mari Dering-Anderson



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Today is 6 October 2023

There may be a discovery or a publication tomorrow that changes the information presented today!

That's the joy of science, it's not static and it requires that you change your mind as you gather new information and evidence.



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What is the “Top 3”?

Most purchases?

Most money?

Most effective?

Most dangerous?

Most advertised?



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Learning Objectives

At the completion of this program, the alert attendee should be able to:

- Identify specific drug-to-drug interactions with cannabinoids
- Describe the dangers in “dangerous supplements”
- Discuss efficacy as it relates to dietary supplements



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My goals

- Describe the “Top 3” Dietary Supplements
 - by US utilization
- Describe the “Top 3” Dietary Supplements
 - by US expense
- Describe the “Top 3” Dietary Supplements
 - by risk



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Most commonly used

Multi-vitamins

Vitamin D

Calcium

**interestingly, these are ALL dietary components

US Department of Health & Human Services
Centers for Disease Control and Prevention
National Center for Health Statistics
2017-2020



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In September 2019

77% of Americans (aged 18 and older) reported consuming dietary supplements

Highest use in those aged 35-54

Women slightly more than men

Weight loss was NOT the primary motivation!



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When to take these?

Turn on your science brain - - when do we get nutrients from our "diet"?

That's when we get nutrients from supplementing our diet too.

These 3 (multi-vitamins, vitamin D, calcium) should be taken immediately following the largest meal of the day



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Appropriate use

When there is a dietary deficiency
or meeting requirements is not possible

When there is insufficient sun exposure
(full face, 20 minutes per day)

When there are kidney problems



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Money spent on dietary supplements

Prenatal Vitamins
Protein
Omega 3 Fatty Acids
Magnesium
Turmeric
Melatonin
Vitamin D



The Council for Responsible Nutrition

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Appropriate use of the most \$ purchased supplements

Prenatal Vitamins

- Planning pregnancy
- Pregnant
- Post-pregnancy lactation
- Some folate deficiencies

Protein

- Inadequate intake conditions

Omega-3-fatty acids

- put them in your diet



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Appropriate use

Magnesium

- use with diagnosis of hypomagnesemia

Turmeric

- Great spice for cooking

Melatonin

- Limited evidence in "jet-lag"
- possible benefit in children with autism

Vitamin D

- Supplement after diagnosis of hypovitaminosis D



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Documented Efficacy

Efficacy requires correct dosing for correct indication

Cranberry for prevention of UTI (NOT treatment)

Vitamins for vitamin deficiency & pregnancy planning through lactation

Dietary supplements based on dietary problems or health conditions
protein, calcium, iron



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**** Major note ****

Cannabinoids, while often sold as gummies or food-stuffs, are NOT included in any surveys or statistics on dietary supplements

BUT, they surely have their share of drug-to-drug interactions



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CBD


“Grapefruit interactions”

Sedation

Makes glaucoma WORSE




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THC (the psychoactive part)

Interacts with

- glaucoma and glaucoma meds
- mental health drugs
- blood pressure drugs



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“Most Dangerous”

Somewhere in the world there is someone who is allergic to whatever it is you’re talking about

The biggest “danger” is avoiding validated therapies for something with no evidence

This section will focus on documented toxicities and serious adverse effects



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We’ll look at 3 lists of “Dangerous Supplements”

Kidney damage & Failure:

Aristolochic acid (birthwort), sangrel, snakeweed, serpentry, sangree root

Liver damage & Failure:

comfrey, ass ear, gum plant, androstienedione, chaparral, kava

Likely hazardous

bitter orange, green orange, Seville orange, kijitsu

George Dawson, MD, June 2004, Journal of the National Medical Association



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Aristolochic acid (birthwort)

aka: pipevine

Aristolochic acids are known carcinogens
with no documented health benefits



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Snakeweed

aka: broomweed, matchweed, *Gutierrezia sarothrae*

No known medical use

Renal toxic



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Comfrey

aka: blackwort, bruisewort, slippery root,
Symphytum officinale, knit bone

Does NOT relieve cough, stop heavy menstrual flow,
relieve stomach upset, stop chest pain, nor treat
cancer

FDA recommended removing all comfrey from the
market in 2001. It's still out there

Does cause liver damage and is carcinogenic



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Androstenedione

aka: DHEA (di-hydro-epi-androsteinedione)

No recognized medical use

Dangers: disqualification from athletic events
increased hormone levels (estrogen &
testosterone) increases risks for
pregnancy, cancer, hypertension,
blood clots

truly too many drug-to-drug interactions to
try to count

liver damage



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Chaparral

aka: creosote bush, grease wood, Larrea divaricate, Larrea tridentata, larreastat

Does not induce weight loss, reduce inflammation, treat a cold, treat an infection, treat a rash, or treat cancer

Does cause both liver and kidney damage, some is irreversible without transplant



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Kava

aka: Kava Kava

Liver toxic, has resulted in hepatic failure, potentially habit forming

Inappropriate for medical use, does have some use in certain religious ceremonies



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Bitter Orange

aka: Seville orange, sour orange, zhi shi, Citrus aurantium

Currently listed as a banned drug due to stimulant properties of synephrine - - hypertension, tachyarrhythmia possible

No appropriate medical use



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Kijitsu

aka: kajitsu

No known appropriate use

Potential for hypertension, arrhythmia



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10 supplements to always avoid

Chaparral
Coltsfoot
Comfrey
Germander
Greater Celandine
Kava
Lobelia
Pennyroyal
Usnic Acid
Yohimbe

Lisa Gill reporting for Consumer Reports
2023 January



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The biggest concern with dietary supplements

Foregoing recommended pharmacotherapy in favor of unproven, virtually unregulated product.

Other concerns:

Expensive
Drug to Drug Interactions
Toxicity
Interference with lab results



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Coltsfoot

aka: coughwort, Farfarae, folium leaf,
foalswort, Tussilago farfara

Does NOT relieve cough, relieve sore throat,
relieve laryngitis, relieve bronchitis, nor
relieve asthma

Does cause liver damage and may be
carcinogenic



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Germander

Aka: Teucrium chamaedrys, Teucrium
viscidum

Does NOT induce weight loss, lower body
temperature, relieve arthritis, treat gout, nor
ease stomach upset

Does cause liver damage, chemical hepatitis



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Greater Celandine

Aka: celandine, Chelidonium majus

Does NOT ease stomachache

Does cause liver damage



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Lobelia

aka: Pokeweed, Vomit wort, Asthma Weed,
Lobelia inflata

No recognized appropriate medical use

Dangers: tachycardia, hypotension, coma,
fatalities reported



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Pennyroyal

aka: Mentha pulegium

Doses required to be abortifacient will be fatal to mom.

Causes irreversible liver and kidney damage

May be safe in weak tea, but why run the risk?
This is listed in the FDA Poisonous plants index



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Usnic Acid

aka: furandione, lichen extract

Used topically in cosmetics & deodorants

When swallowed can cause acute liver injury
Many reports from combo products containing usnic acid



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Yohimbe

aka: Corynanthe yohimbe, Corynanthe johimbi, yohimbine (!)

Note: Yohimbine is a legend drug

Known use: No safe OTC use is recognized, minimally effective for erectile dysfunction when used at prescription doses, under medical supervision

Dangers: Hypertension, tachycardia, higher doses can result in hypotension, arrhythmia, fatalities have been reported



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12 Dangerous Supplements

Aconite
 Bitter Orange
 Chaparral
 Coltsfoot
 Comfrey
 Country Mallow
 Elemental Silver, Ionic Silver, Native Silver
 Germanium
 Greater celandine
 Kava
 Lobelia
 Yohimbe



CBS News: Health, 4 August 2010

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Aconite

aka: aconite tuber, aconitum, radix aconite

No recognized medical benefit

Risks: nausea, vomiting, arrhythmia, hypotension, severe respiratory depression, fatalities



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Country Mallow

aka: heartleaf, silky white mallow, mallow of the marsh, *Sida cordifolia*

No recognized medical benefit

Neat history in WWII

Severe adverse reactions at non-food doses: stroke, arrhythmia, cardiac arrest



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silver

aka: ionic silver, medical silver, elemental silver,
native silver, colloidal silver

Has topical antimicrobial benefits, prescription only
can tarnish, do NOT scrub greyed wound

Do not ingest

Significant adverse effects: "Smurfism" (bluing of skin);
neurologic damage, renal damage



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Germanium

aka: Ge,

Medical Use: None

Potential Effects: renal damage, fatalities

Important for wide-angle camera lenses



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Most Advertised?

Not quantified in a reliable fashion

The FDA says that the 3 biggest scam markets are:

- Weight loss
- Sexual enhancement
- Muscle building

Social media targeting is real

Type “Scholarly information about ...”



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Googling it \neq Research

Ask a drug expert

Check the FDA web-site

Check the National Institutes of Health web-site

Do not rely on web-sites that sell product



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Questions?

Comments?

Concerns?



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References

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