Tasting Healthier Wines

THEY DO EXIST, DON'T THEY?

Society of Wine Educators 43rd Annual Conference Washington, DC

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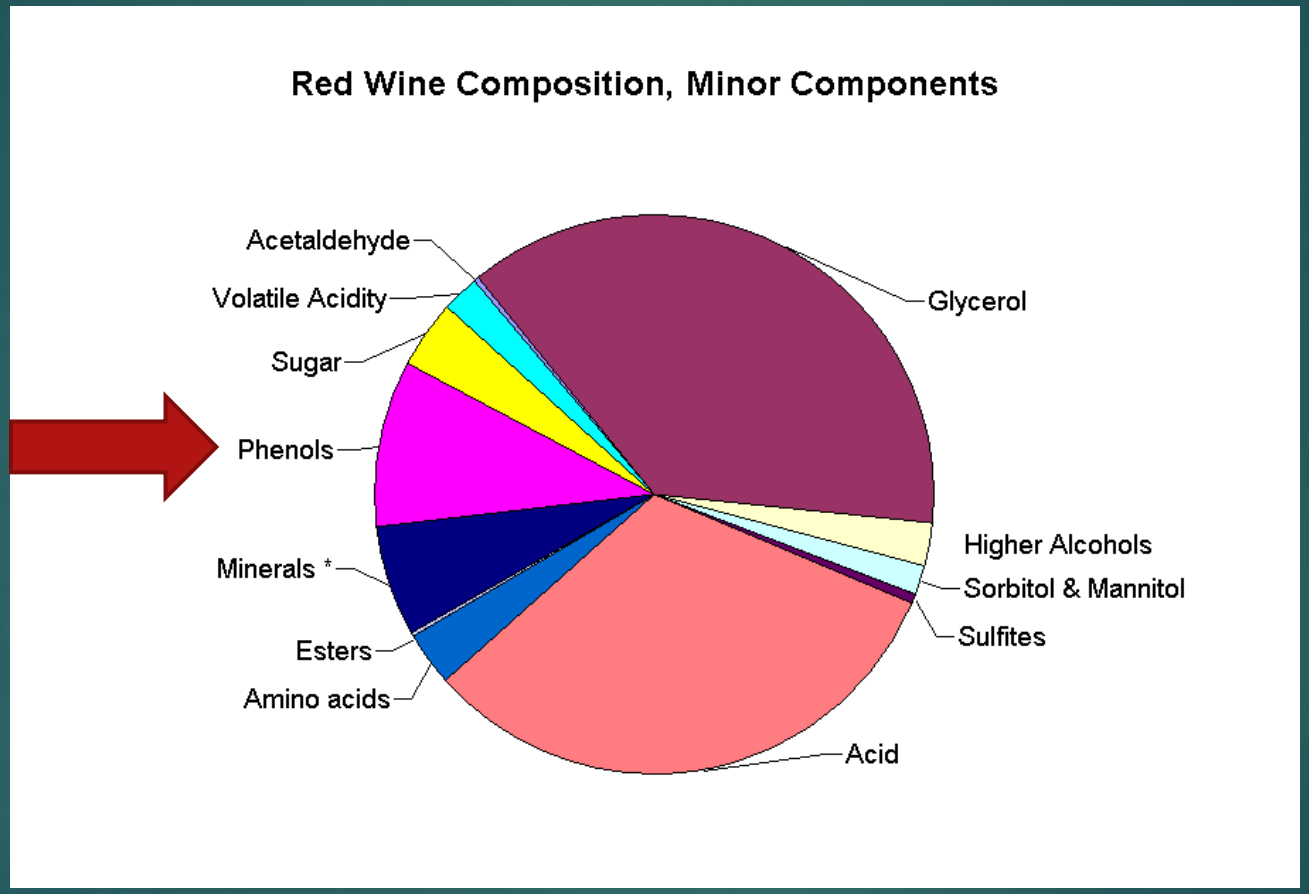
@winefoodhealth

Undiagnosed Middle-Age-Onset Discomfort
Summer Tour T-shirt
Cartoon by DKO

The New Yorker, July 1, 2019

That Other 5%



waterhouse.ucdavis.edu

Basic Definitions

Macronutrients

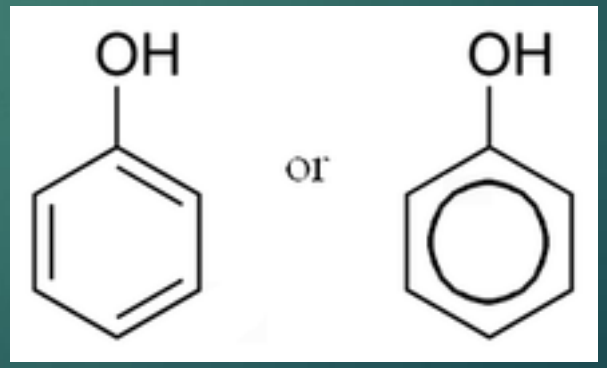
Micronutrients

"Other"

Definitions

- Cartoon: Bor—ing

- **Phytochemical**
  - Chemical produced by plants
- **Polyphenol**
  - Compound with > 1 phenol group
  - ‘Phenolics’



Shutterstock.com | 630700160

3 Polyphenol Families

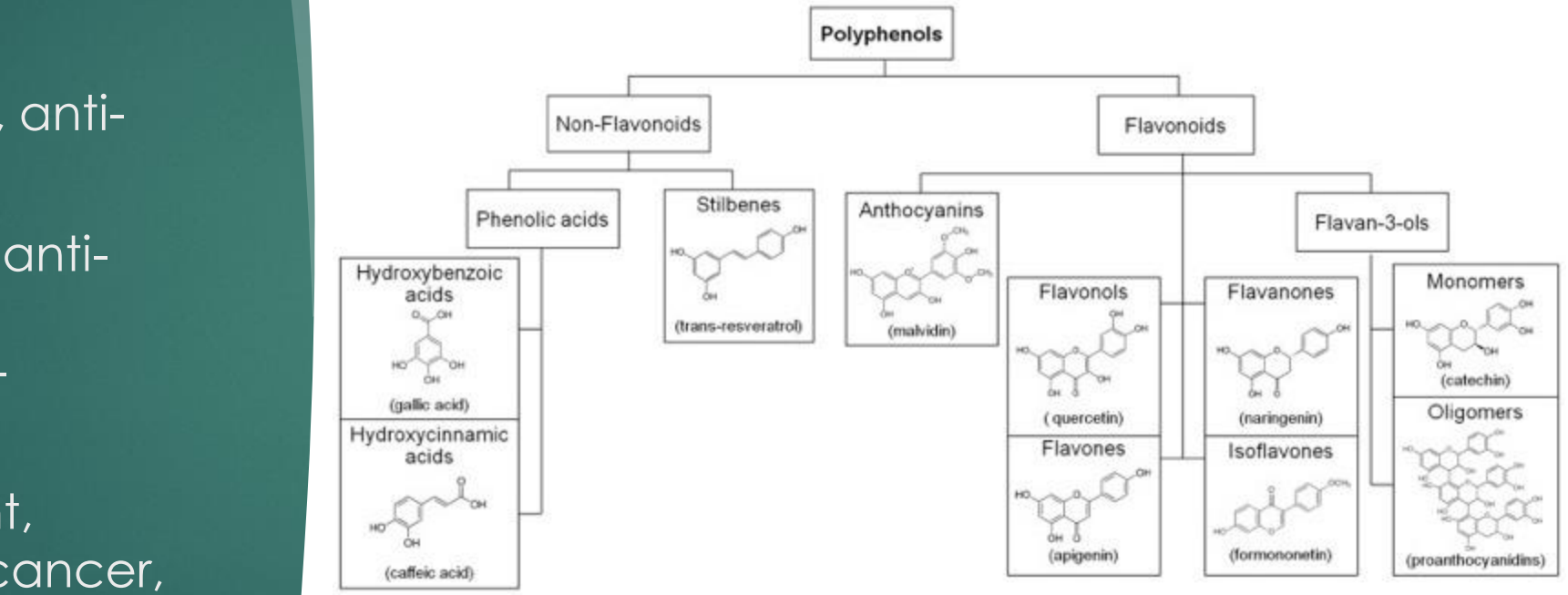
- **Flavonoids – 3 rings**
  - 5,000 compounds
  - 6 major subclasses
  - Citrus, tea, chocolate
- **Non-flavonoids – 2 rings**
  - **Stilbenes**

    Seeds, legumes, pomegranate
  - **Phenolic acids – 1 ring**

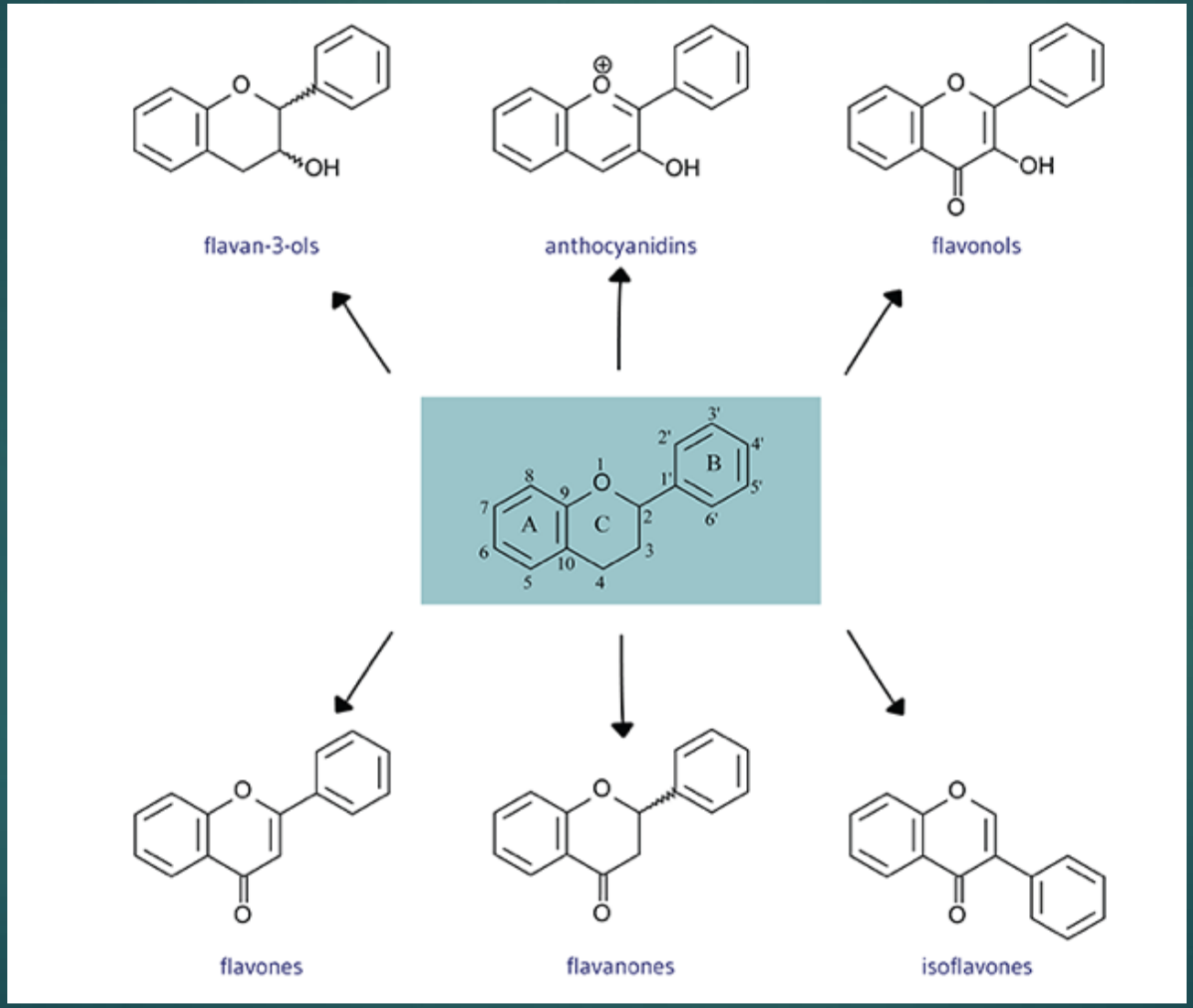
    Coffee, vinegar, strawberries

Polyphenols

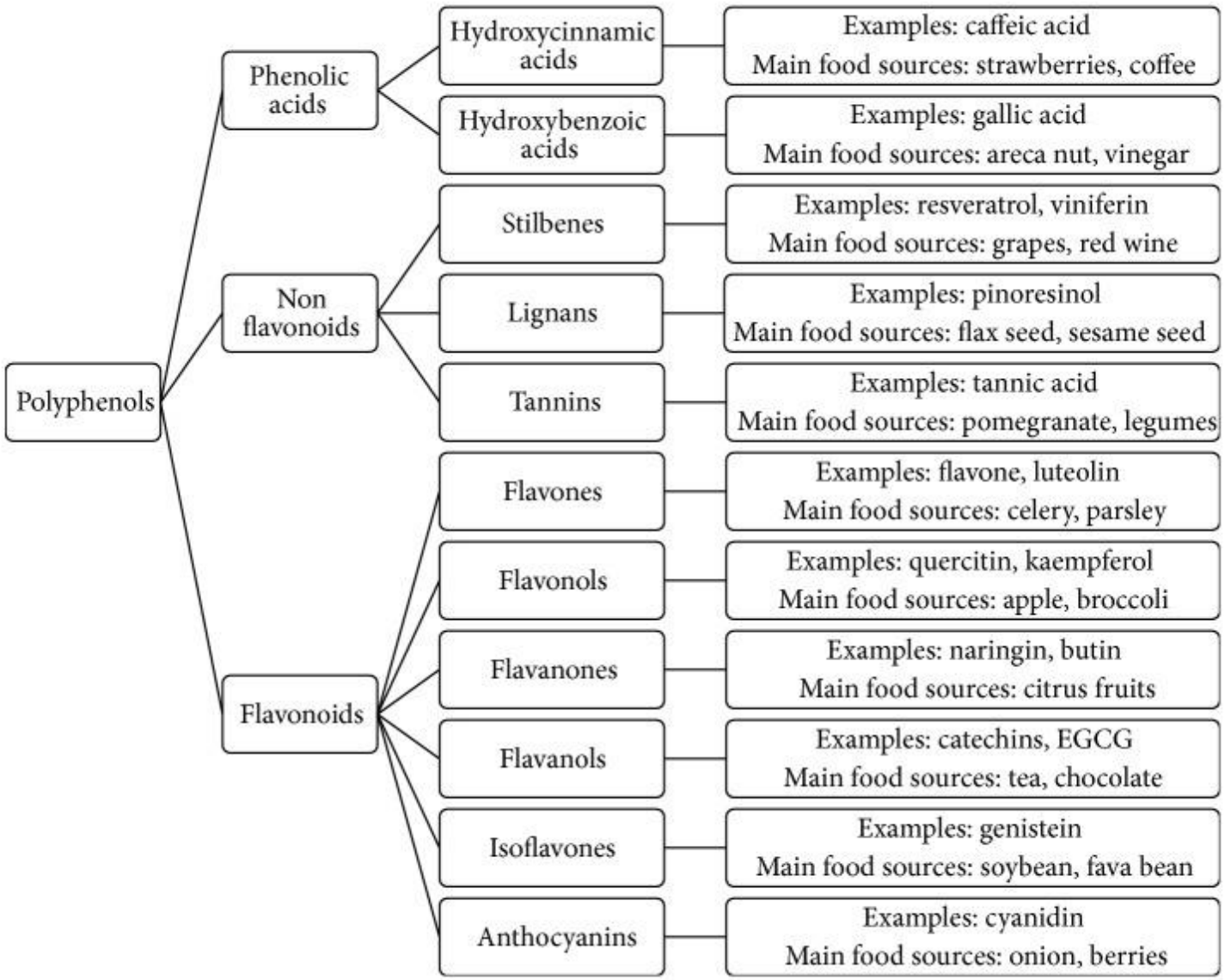
- Phenolics: antioxidant, anti-cancer, antimicrobial
- Stilbenes: antioxidant, anti-inflammatory, cardioprotective, anti-cancer, anti-diabetes
- Flavonoids: antioxidant, heart-protective, anticancer, anti-inflammatory, antimicrobial



Flavonoid Subclass Structures



https://lpi.oregonstate.edu/mic/dietary-factors/phytochemicals/flavonoids



Basheer L and Kerem Z. Oxid Med Cell Longev. 2015:854015.

Real World Polyphenols

Polyphenols = Terminators

- Defense chemicals
- Insects, animals, microbes
- UV radiation
- Nontoxic to humans
- Polyphenol content in wine

⇢ taste profile, organoleptic

www.slideshare.net/NAGINAFATIMA/plant-phenolic-compounds/9

Influencers

- Threats
- Temperature
- Sun exposure
- Water stress
- Geology / soil
- Fertilizers
- Maceration
- Fermentation
- Aging / wood

Cardi B, Instagram via www.numero.com

Zorraquín-Peña I et al. Beverages 2019, 5(1).

Teixeira A et al. Int J Mol Sci. 2013, 14(9), 18711-18739.

No-Arrow Zone

Williamson G. Nutr Bull 2017:42, 226–235.

A → B


BLUE
ZRH
Smoking seriously harms you and others around you
CAMEL
BLUE
WIN YOUR NEXT HOLIDAY WORTH UP TO US$10,000*
TRAVEL RETAIL EDITION
Smoking kills
BLUE
MAD
Smoking kills
CAMEL
BLUE
WIN YOUR NEXT HOLIDAY WORTH UP TO US$10,000*
TRAVEL RETAIL EDITION
Smoking kills

https://lisakmcdonald.files.wordpress.com/2012/11/squiggly-line.jpg?w=300

Survey of the Free and Conjugated Myricetin and Quercetin Content of Red Wines of Different Geographical Origins

Morag S. McDonald,[†] Mark Hughes,[†] Jennifer Burns,[†] Michael E. J. Lean,[§] David Matthews,[‡] and Alan Crozier*[,†]

Differences in the amount and structure of extractable skin and seed tannins amongst red grape varieties

F. MATTIVI, U. VRHOVSEK, D. MASUERO and D. TRAINOTTI

Antioxidant Capacities and Phenolics Levels of French Wines from Different Varieties and Vintages

Nicolas Landrault,[†] Patrick Poucheret,[‡] Patrice Ravel,[§] Francis Gasc,[†] Gérard Cros,[‡] and Pierre-Louis Teissedre*[,†]

Flavonol composition of Australian red and white wines determined by high-performance liquid chromatography

D.W. JEFFERY, M. PARKER and P.A. SMITH

A Global Survey of *Trans*-Resveratrol Concentrations in Commercial Wines

DAVID M. GOLDBERG[1*], JOE YAN[2], ERIC NG[2], ELEFTHERIOS P. DIAMANDIS[1,3], ALEX KARUMANCHIRI[2], GEORGE SOLEAS[4], and ANDREW L. WATERHOUSE[5]

Phenolic composition and magnitude of copigmentation in young and shortly aged red wines made from the cultivars, Cabernet Sauvignon, Cencibel, and Syrah

Isidro Hermosín Gutiérrez [a,*], Eva Sánchez-Palomo Lorenzo [b], Almudena Vicario Espinosa [b]

Characterisation and evolution of grape polyphenol profiles of *Vitis vinifera* L. cv. Tannat during ripening and vinification

E. BOIDO[1], M. GARCÍA-MARINO[2], E. DELLACASSA[3], F. CARRAU[1], J.C. RIVAS-GONZALO[2] and M.T. ESCRIBANO-BAILÓN[2]

Variation in Condensed Tannin Content, Composition and Polymer Length Distribution in the Skin of 36 Grape Cultivars

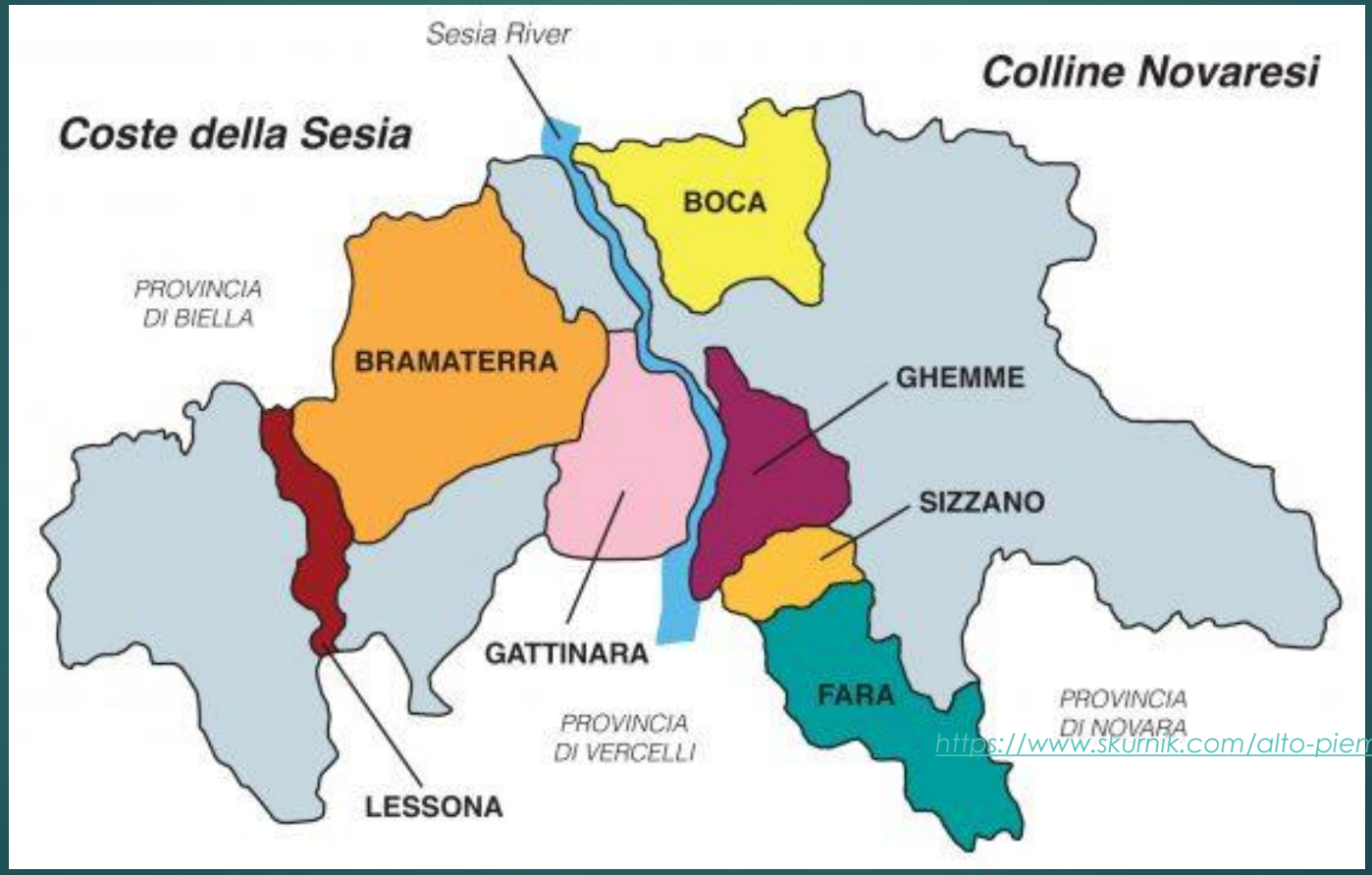
Mark O. Downey[1]*, Marica Mazza[1], Tara J. Seddon[1,2], Simone Rochfort[3] and Mary Millikan[2]

Do Not Underestimate The Force

Mazzoni, Nebbiolo “Del Monteregio”, Colline Novaresi (Piemonte), DOC 2016

- 100% Nebbiolo
- DOC 1994
- Volcanic; gravel, clay, sand
- Practicing organic
- 500 L tonneaux (used) X 1 yr
- 13% ABV
- > 2020 drinking window

Alto Piemonte



https://www.skurnik.com/alto-piemonte-region-rise/

MAZZONI, COLLINE NOVARESI NEBBIOLO “DEL MONTEREGIO”

PIEDMONT, ITALY 2016

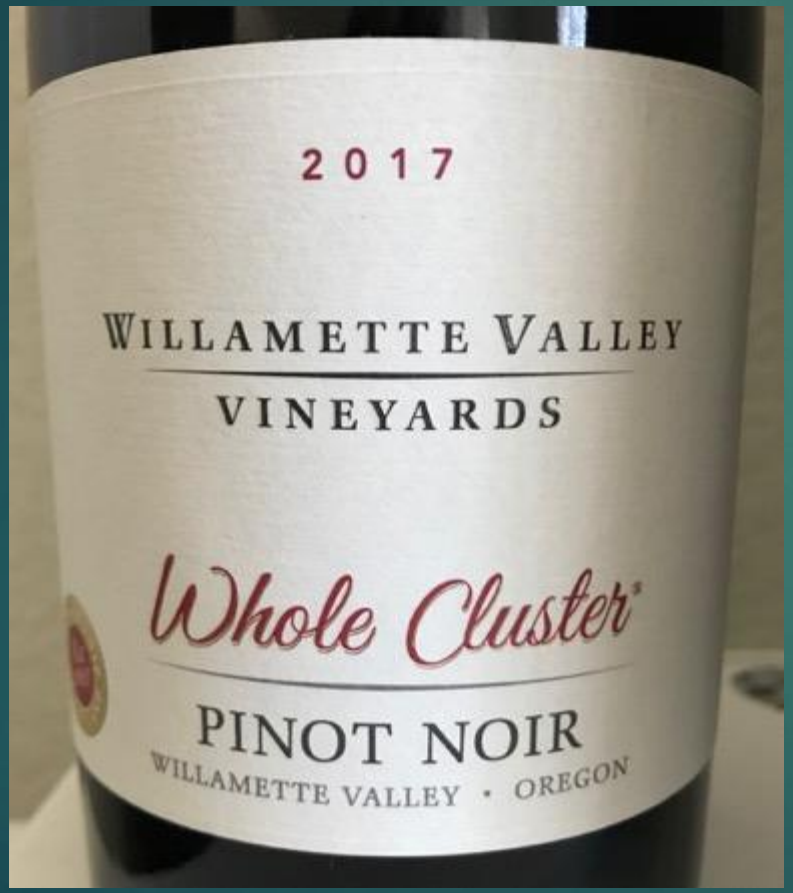
SOMM SELECT

364-day, all-occasion Nebbiolo

Gentle lift of happy, aromatic ‘Alto Piemonte’ (Ghemme hills)

Gattinara, Lessona, Boca, Bramaterra, Fara, Sizzano (Alps)

Willamette Valley Vineyards, Whole Cluster Pinot Noir, Willamette Valley, Oregon 2017

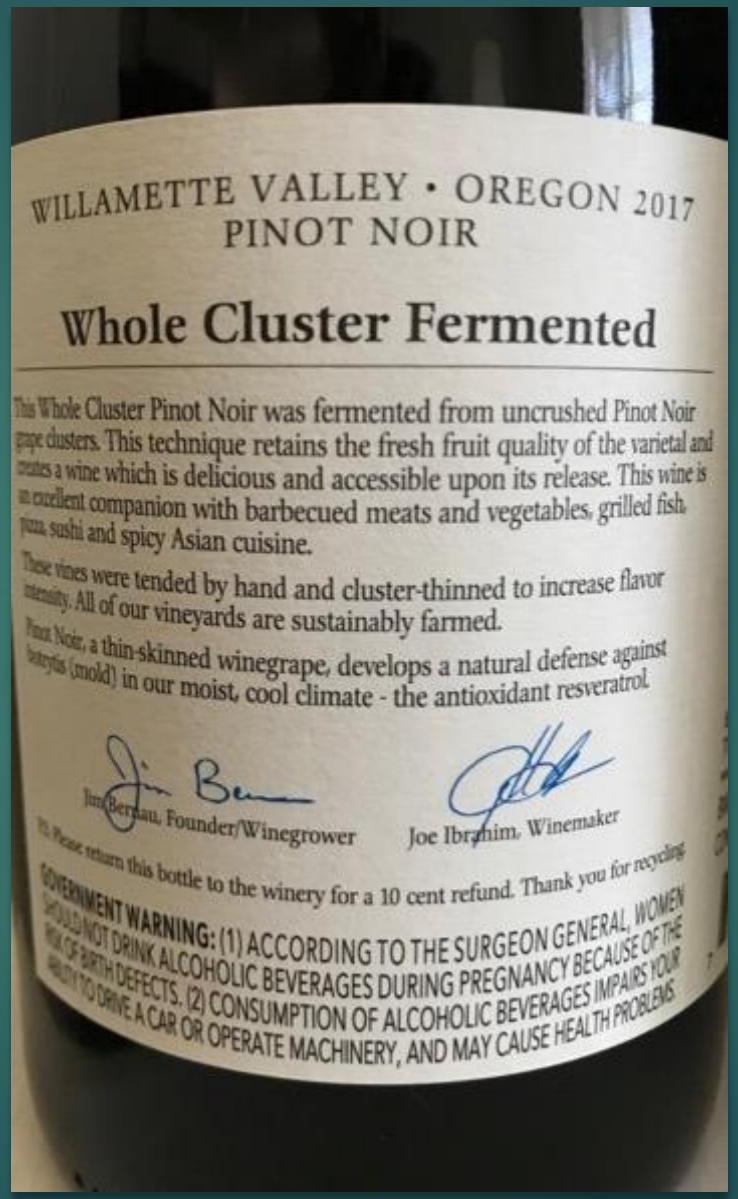


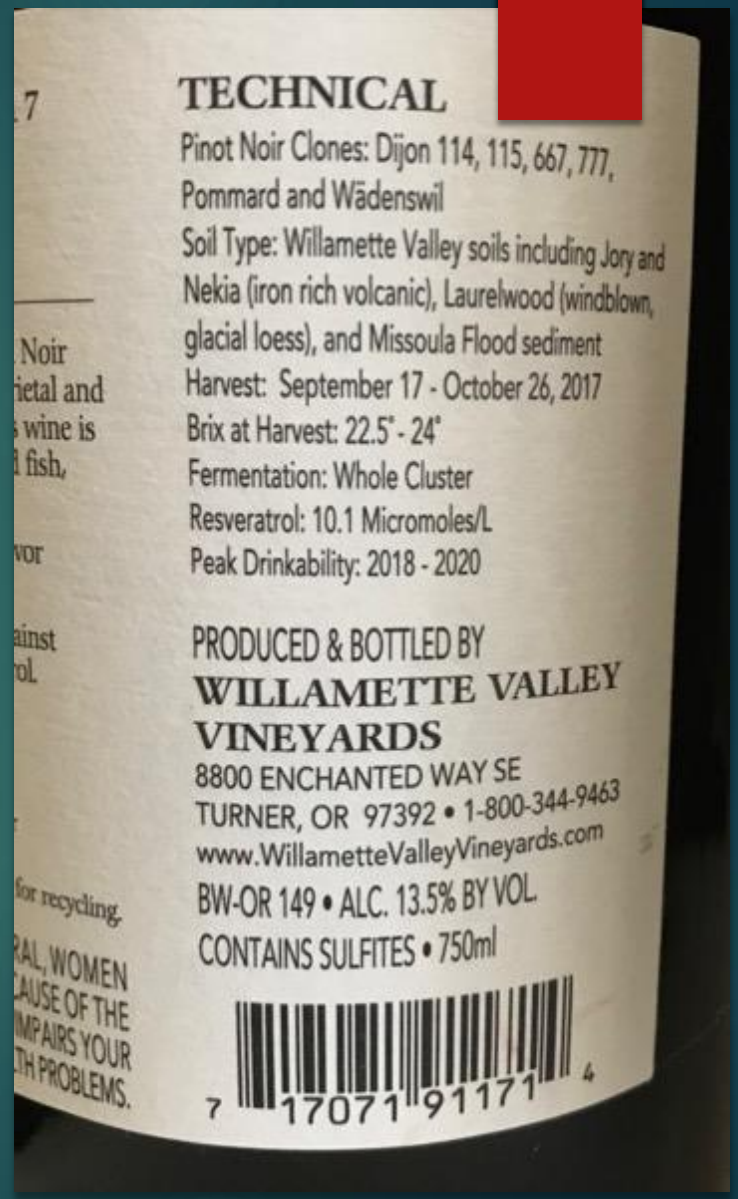
- Pinot Noir, Clone 114, 115, 667, 777, Pommard and Wädenswil
- Jory and Nekia (iron rich volcanic), Nekia, Laurelwood (wind blown, glacial loess) including Pisolites and Missoula Flood sediment
- 13.5% ABV
- Carbonic maceration
- Whole cluster fermentation in stainless steel tanks, 7–10 days
- 55,000 cases
- Peak drinkability 2018 - 2022

Resveratrol = 10.1 micromoles / L

- TTB 2002
- Whole cluster > highest
- Whites ~ ¼ of reds
- ~ 0.1 to 2.6 mg/L*
- clinicaltrials.gov : 123

* Romanian wines, 2014





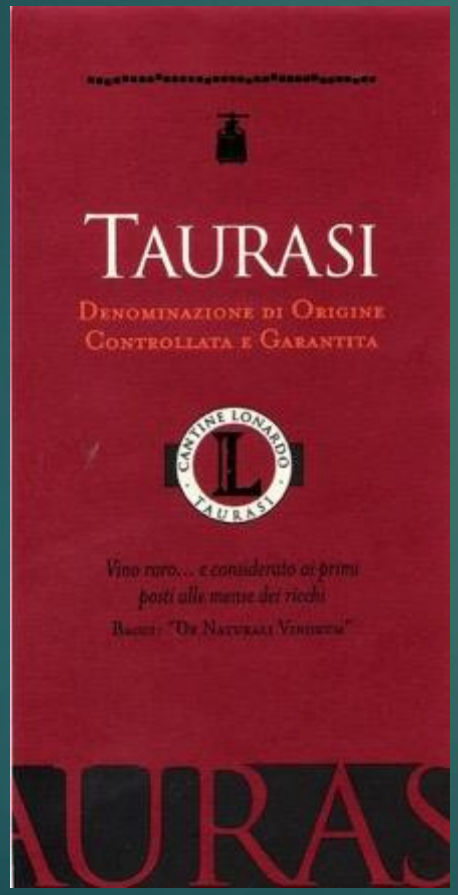
Resveratrol in Action

- Dose, matrix, size, biome, time of day
- ≥ 1 g / day
- 👍▩ antioxidant, neuro inflammation □
- 👍▩👎▩ diabetes, heart/lining, inflammation

Den Hartogh DJ and Tsiani D. Nutrients 2019, 11, 1624.

Ramírez-Garza SL et al. Nutrients 2018, 10, 1892

Cantine Lonardo Taurasi DOCG
Aglianico, Campania, Italy 2012



- 100% Aglianico
- 1,200 feet / 400 meters
- Limestone & volcanic marls
- ~ 1 month maceration
- 20–50 year-old vines
- Aging:
  - 18 mos used tonneau
  - 6 mos stainless steel
  - 12 mos bottle

winefolly.com

WINE FOLLY

AGLIANICO

DOMINANT FLAVORS

WHITE PEPPER

BLACK CHERRY

SMOKE

GAME

SPICED PLUM

COLOR / TASTE PROFILE

REGIONS

ITALY

Basilicata, Campania (small amounts in Puglia, Abruzzo, Lazio, Molise and Calabria)

OTHERS

Argentina, United States, Australia

25,000
ACRES
-
10,100
HECTARES

WINE FOLLY

winefolly.com/learn/variety/aglianico/

‘Barolo of the South’

- Taurasi DOCG 1993
- Etruscan, Hellenic or native?
- Roman Empire
- 3 biotypes: Taurasi, Taburno, del Vulture
- Thick skinned, slow ripener
- US 1988 (Paso Robles, Caparone)
- Floral, firm, mineral, acid, tannin, depth of flavor, smoky, spicy
- ‘Wine railroad’ to the North

Bolivia

- Potosí: 1630 > London
- 1930s: French, Singani
- 1960s: Argentine tech
- 1999: First Tannat, Tarija

Elbow of The Andes

The New York Times

- Landlocked
- World's highest altitude vines
- Latitude: 17° – 22° South
- ~ 3X Montana, ~ 11 million people
- Winemaking x 400 years
- Singani, Muscat de Alexandria

Santa Cruz Valleys

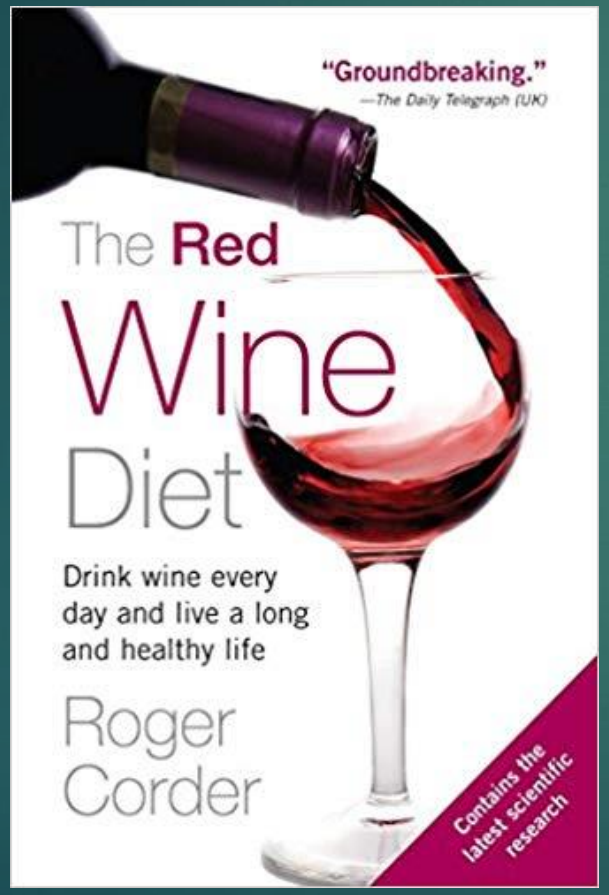
- 1600 – 2300 meters (4800 – 6900')
- 300 hectares (80K capacity)
- ~ 24" annual rainfall
- 18° – 19° latitude south
- Samaipata, Uvairenda: quality wines

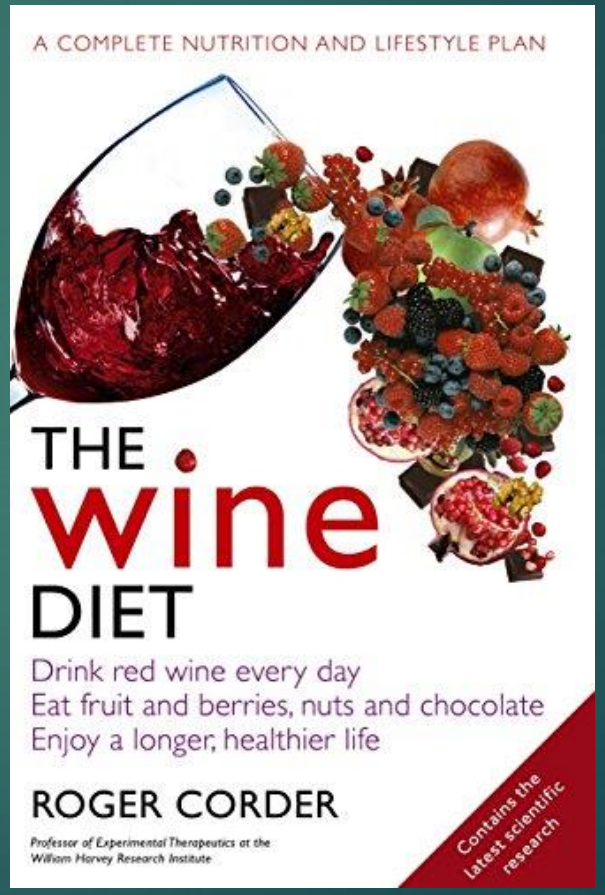
winesofbolivia.com

Vinos1750, Bodega Uvairenda Samaipata, Bolivia 2016

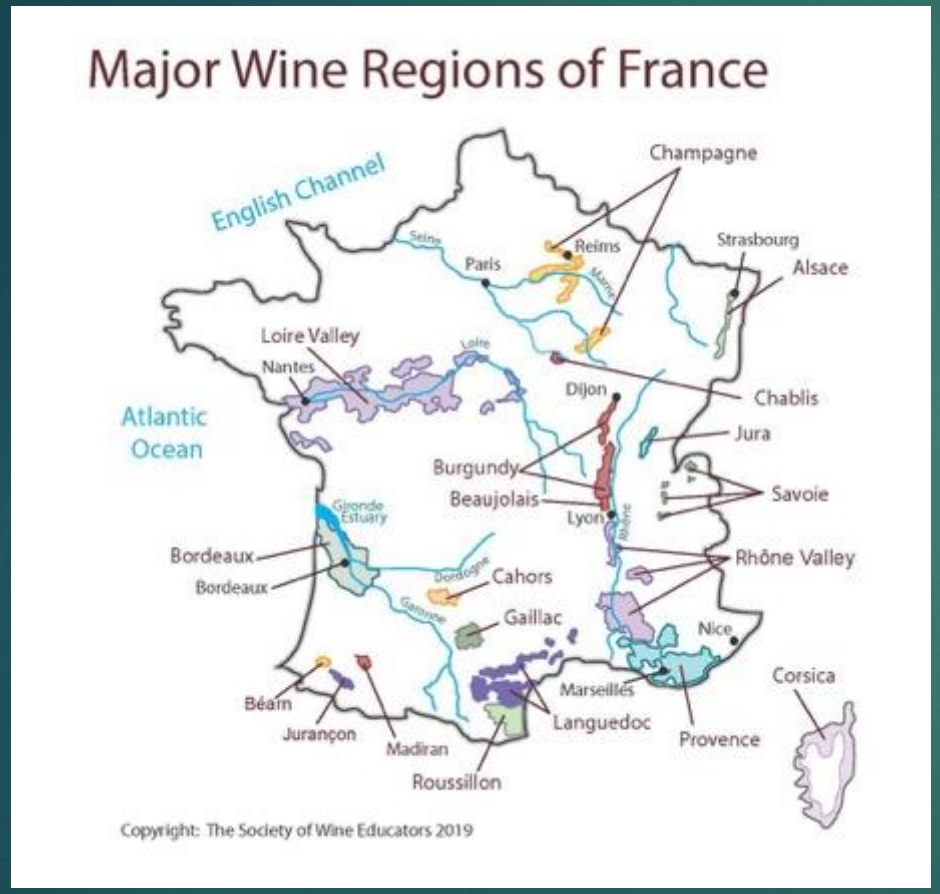
- Guaraní native artwork
- 5741 – 6890 feet
- 100% Tannat
- Sandstone, schist
- SS fermentation, no oak
- 14%
- WM: Francisco Roig

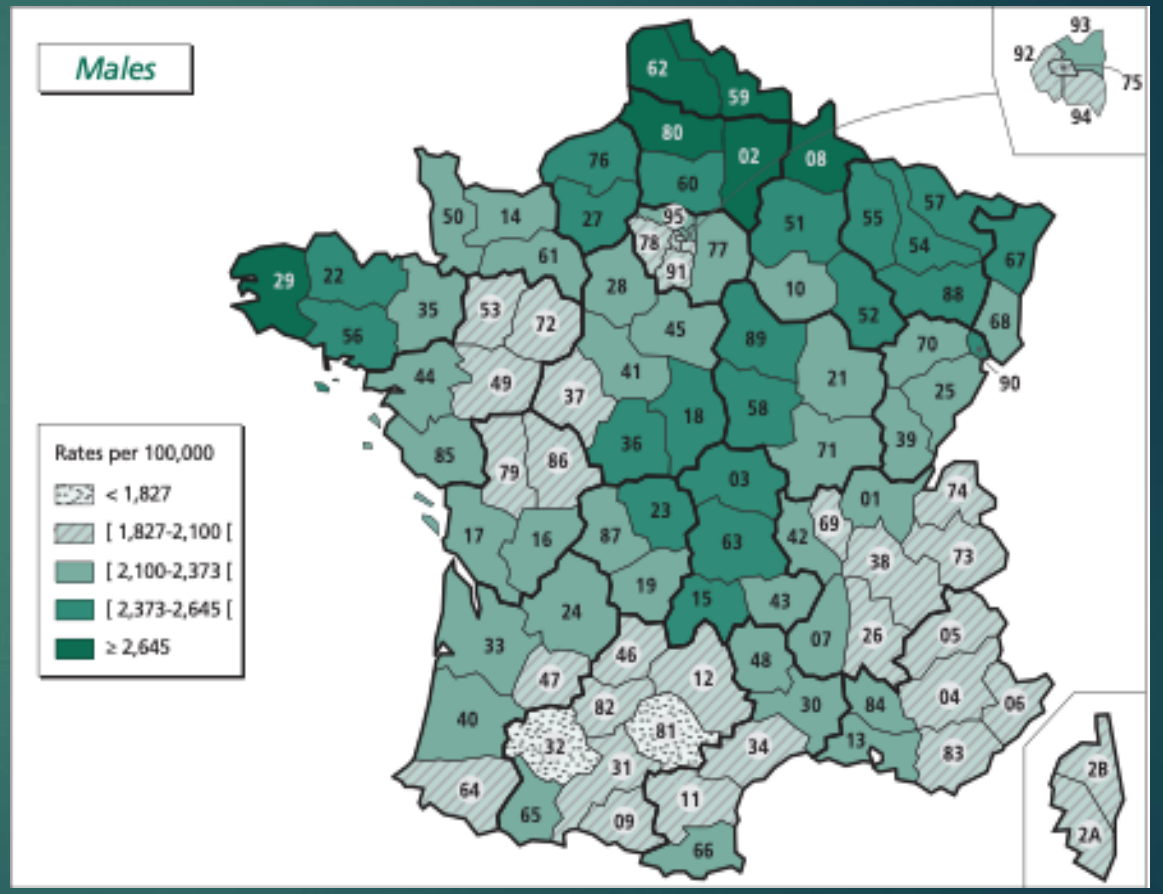
Roger Corder: Procyanidin Man





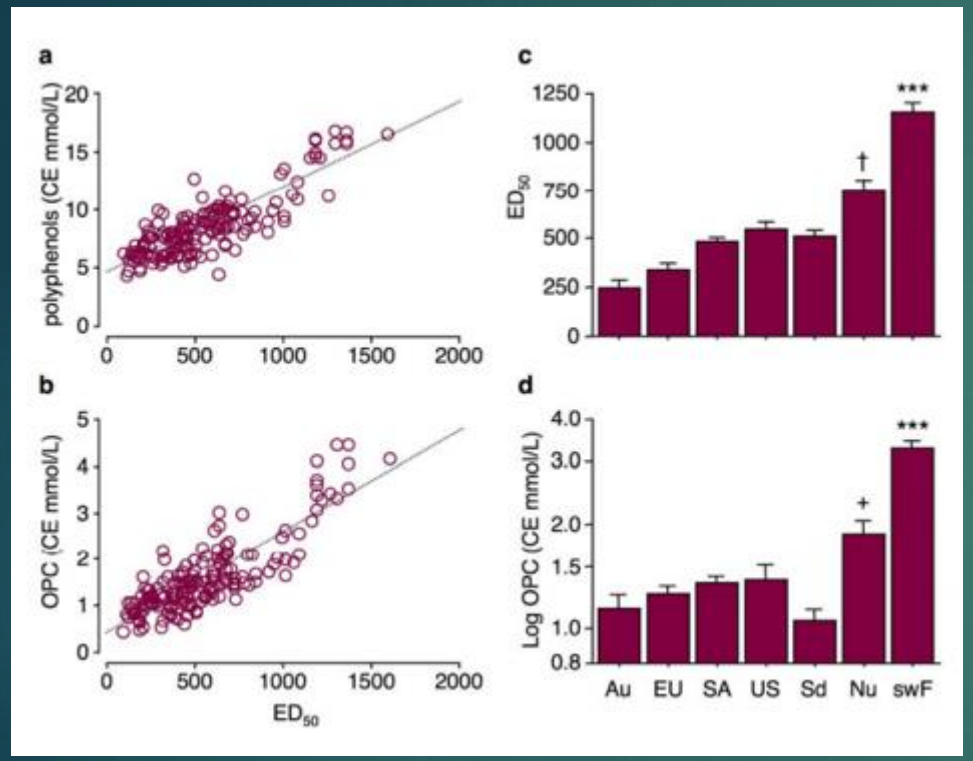
Longevity & Endothelium





Source: INSEE in Barbieri M. Mortality in France by Département. Population-E. 2013;68(3):375-418.

Terroir of Longevity



- OPC: oligomeric procyanidins
- Endothelin-1

- Pips (seeds) main source
- 3+ wks ferment + maceration
- Nuoro & Gers wines: 2–4 X biologic activity and OPC content

Corder R et al. Oenology: red wine procyanidins and vascular health. Nature. 2006 Nov 30;444(7119):566.

Tannat

- SW France (Gers, Madiran)
- Richest tannin content
- Pips, skins: tannins; skins: anthocyanins
- High phenols, polyphenols
- Resveratrol > PN, Merlot, Cabernet
- Genes → enzymes → tannins

naturalmerchants.com/organicwines/varietals/organic-tannat/

polyphenols

Polyphenol-Rich Grapes

High Tannins

- Tannat
- Sagrantino
- Malbec
- Aglianico
- Petite Sirah
- Cabernet Sauvignon

High Anthocyanins

- Tannat
- Alicante Bouschet
- Souzao
- Petite Sirah

www.winecurmudgeon.com

Anthocyanin & Tannin Extraction

- Pectolytic enzymes
- ↑ fermentation temperature
- Thermovinification (flash détente)
- Saignée
- ↑ frequency, duration of punch-downs
- Extended maceration
- Must freezing (cryo-maceration, CM)

Texas Wine Country

- Texas High Plains AVA, 1993
- Amarillo, Lubbock +
- 33.5° N, 102.1° W
- 4,000 acres
- Elevation 3,500 feet
- 85% of TX wine grapes
- Semi-arid, 17-21” rainfall
- Sedimentary, eolian: sandy, loam

Bending Branch Winery Tannat CM Newsom Vineyard, Texas High Plains 2014

- Cryo-maceration
- American oak, 36+ months
- 14.2%
- 94 cases
- Robert W Young, MD, winemaker

Flash Détente


Source: Bending Branch Flash Détente unit

- Thermoflash, flash release
- 1990s, south of France
- Must rapidly heated 185°F / 85°C
- Vacuum chamber > cooling
- Color, tannin extraction
- Skins & vacuoles > seeds
- Release aromatics
- Removes ‘air-oir’, laccase, pyrazines

Quality Outcomes – Flash

- ↑ Anthocyanin, tannin extraction (~ 20 – 50%)
- ↑ Fruit flavor expression
- ↓ Undesirable aromatics, flavors
- ↑ Brix (~ 1–5%)
- Fruit rescue (under-ripe, rot)

- ? Dampen varietal character

Grape Phenolic Extraction

CRYO-MACERATION

- Skins and seeds
- Tannins > Anthocyanins

THERMOVINIFICATION

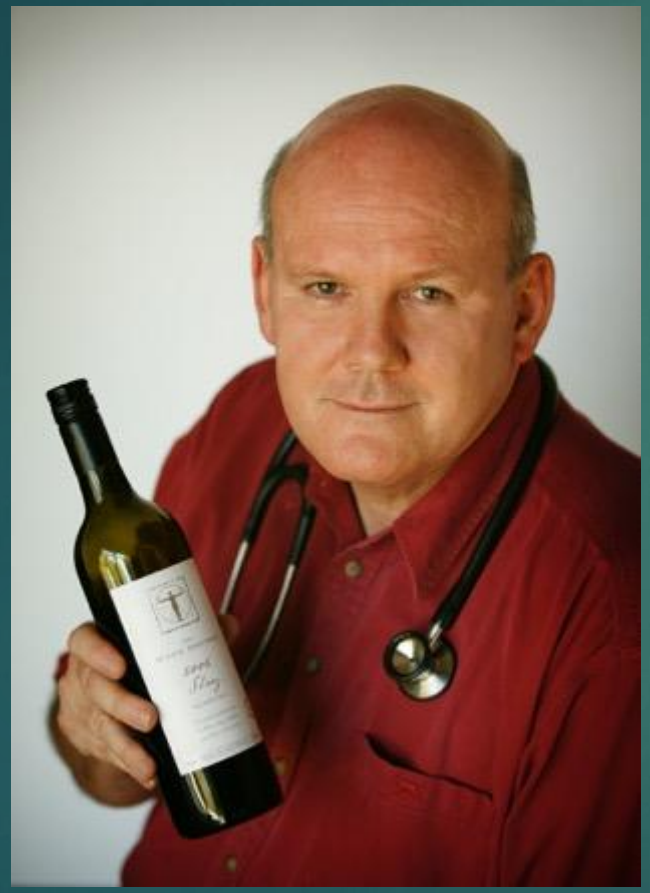
- Skins primarily
- Anthocyanins > Tannins

The Wine Doctor Shiraz Barossa Valley, 2016

- 100 mg / L resveratrol
- Philip Norrie, MD
- ”World’s healthiest wine”
- 2006, patent 2008
- 14%

Helps you die young, as late as possible

– Dr. Philip Norrie



- *Australia's Wine Doctors*, 1986
- 2006 Shiraz, 2008 Chardonnay
- ResElixir 30 ml bottles
- Maroon Wines, Napa
- Charities Ethiopia, Australia

Wherefore Resveratrol?

Beyond Earth

An antioxidant in red wine might power astronauts on Mars, study says

By **Ashley Strickland**, CNN

Updated 12:02 AM ET, Thu July 18, 2019

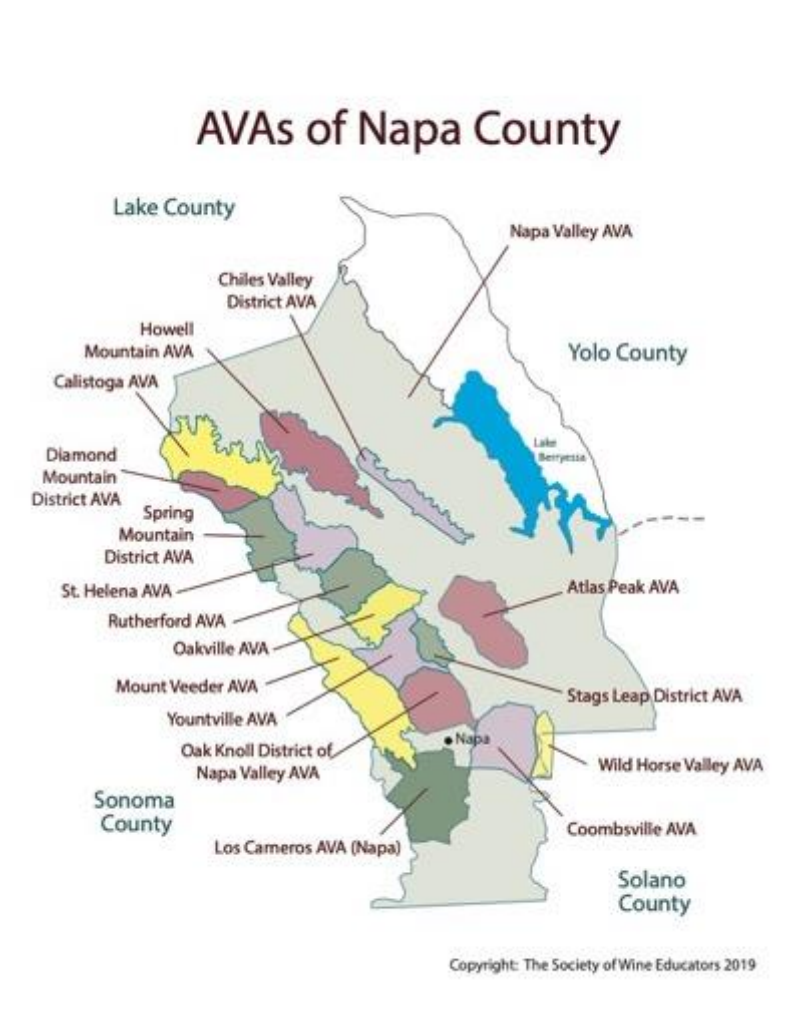
Trinchero Forte Red Wine Napa Valley 2014

- Mostly Malbec
- Rest = PV, CF, PS
- Atlas Peak (Haystack Vyd)
- ~ 1,500', Vaca Mtns
- Volcanic, porous > acidity
- Cloud's Nest Vyd (Mt. Veeder)
- Napa–Sonoma boundary, 2,700'
- 14.9%

Trinchero Cloud's Nest Petit Verdot Mt. Veeder, Napa Valley 2014

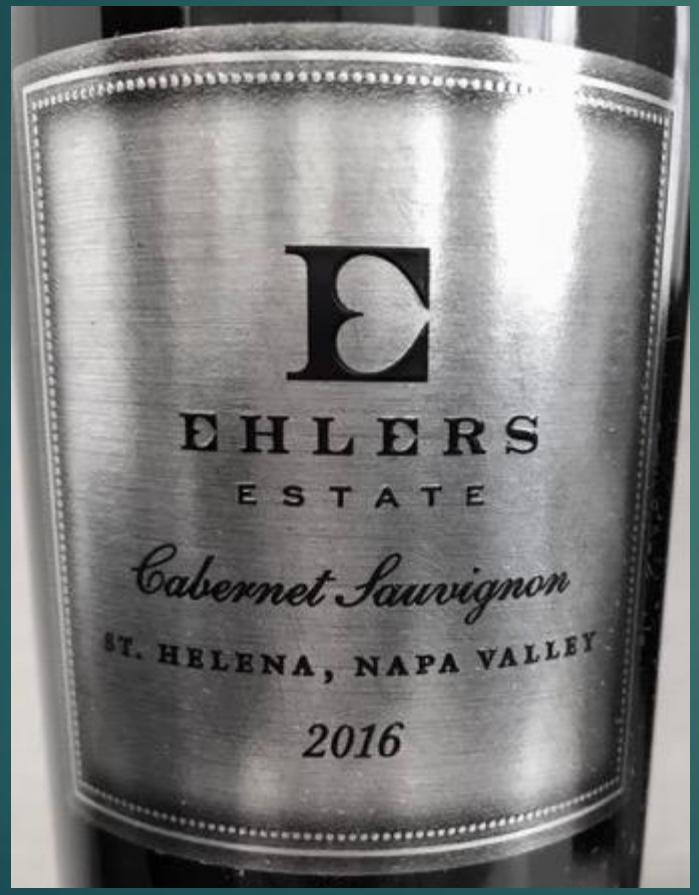
- 100% Petit Verdot
- Mt. Veeder, Mayacamas
- Gravelly sandstone & shale
- Cool, eastern exposure
- 20 months, 100% French oak
- 14.6%

That Mountain Thang



- Low night temps → anthocyanins
- Elevation, UV → anthocyanins
- Water stress → anthocyanins, PAs
- Temps > 25°C / 77°F → max poly
- Small berries, thicker skins
- Low-level nutrients, minerals → anthocyanins & phenolics

Ehlers Estate Cabernet Sauvignon St. Helena, Napa Valley 2016



- 88% Cabernet Sauvignon, 12% Merlot
- 2008: Certified Organic (CCOF)
- Contiguous 42-acre estate vyds
- Napa's narrowest point
- WM Laura Díaz Muñoz
- Near-perfect vintage
- Loamy bench soils
- 14.5%
- 1,800 cases

History

- Bernard Ehlers, 1880s
- 1990s Jean and Sylviane Leducq
- 1995 replantings, enologist Jacques Boissenot
- Bordeaux varietals (CS, CF, Merlot, PV, SB)
- 1996: Leducq Foundation

Blue Wine?

Figueira I, Menezes R, Macedo D, Costa I, Dos Santos CN. Polyphenols Beyond Barriers: A Glimpse into the Brain. Curr Neuropharmacol. ***2017****;15(4):562–594.*

Alcoholism: Clinical and Experimental Research

Vol. 43, No. 8
August 2019

Alcohol Consumption in Later Life and Mortality in the United States: Results from 9 Waves of the Health and Retirement Study

Katherine M. Keyes, Esteban Calvo, Katherine A. Ornstein, Caroline Rutherford, Matthew P. Fox, Ursula M. Staudinger, and Linda P. Fried

Background: Alcohol consumption in later life has increased in the past decade, and the relationship between alcohol consumption and mortality is controversial. Recent studies suggest little, if any, health benefit to alcohol. Yet most rely on single–time point consumption assessments and minimal confounder adjustments.

Methods: We report on 16 years of follow-up from the Health and Retirement Study (HRS) cohorts born 1931 to 1941 (N = 7,904, baseline mean age = 61, SD = 3.18). Respondents were queried about drinking frequency/quantity. Mortality was established via exit interviews and confirmed with the national death index. Time-varying confounders included but were not limited to household assets, smoking, body mass index, health/functioning, depression, chronic disease; time-invariant confounders included baseline age, education, sex, and race.

Results: After adjustment, current abstainers had the highest risk of subsequent mortality, consistent with sick quitters, and moderate (men: HR = 0.74, 95% CI: 0.60 to 0.91; women: HR = 0.82, 95% CI: 0.63 to 1.07) drinking was associated with a lower mortality rate compared with occasional drinking, though smokers and men evidenced less of an inverse association. Quantitative bias analyses indicated that omitted confounders would need to be associated with ~4-fold increases in mortality rates for men and ~9-fold increases for women to change the results.

Conclusions: There are consistent associations between moderate/occasional drinking and lower mortality, though residual confounding remains a threat to validity. Continued efforts to conduct large-scale observational studies of alcohol consumption and mortality are needed to characterize the changing patterns of consumption in older age.

Key Words: Alcohol Consumption, Older Adults, Health and Retirement Study, Mortality, Moderate Drinking.

Keyes KM et al. Alc Clin Exp Res, Vol 43, Issue 8, August 2019, 1734-1746.

Alcohol & Mortality

- 8,000 US adults > 56, ~ 15 yrs
- Time & other confounders
- Smokers, M < nonsmokers, F
- Risk varies for some

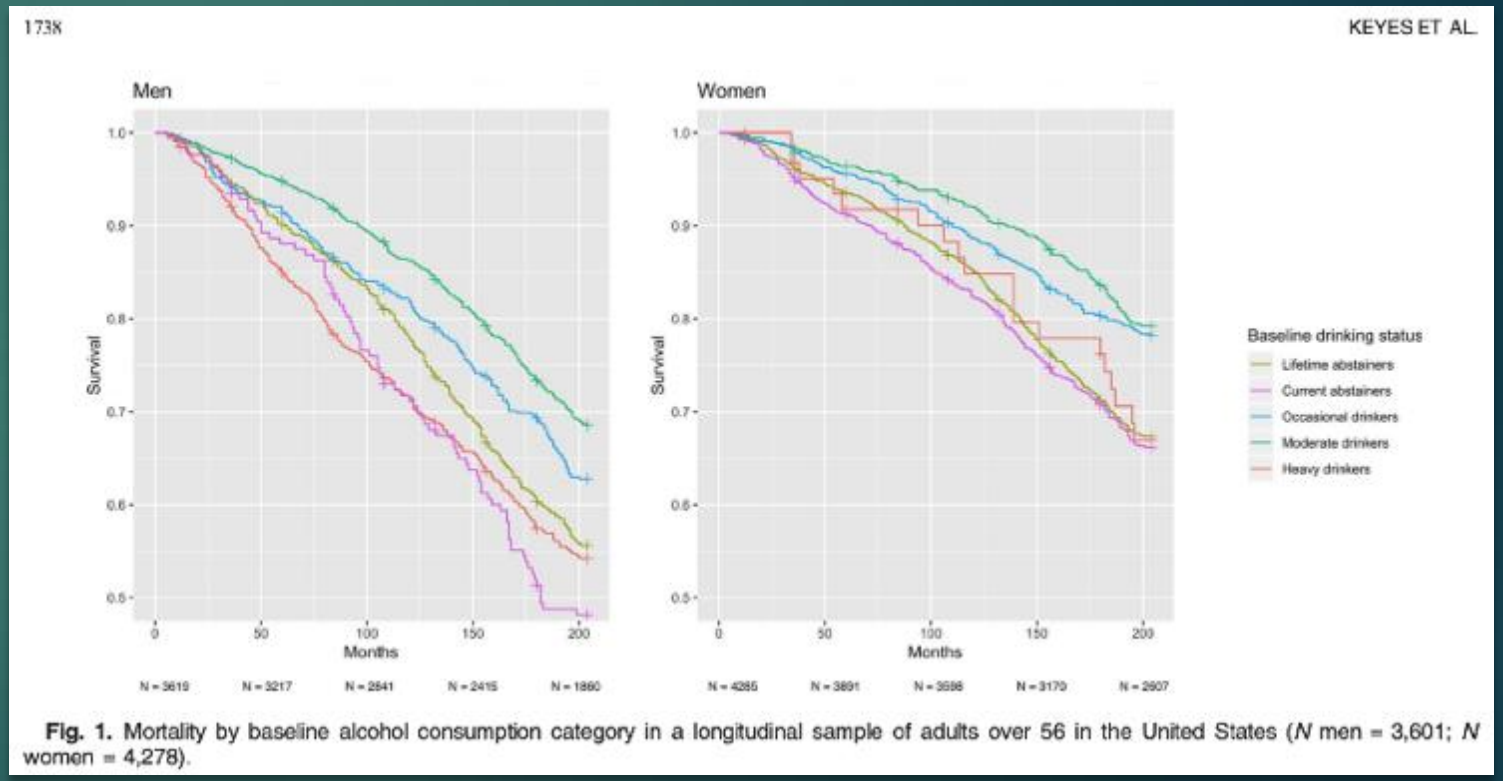


Fig. 1. Mortality by baseline alcohol consumption category in a longitudinal sample of adults over 56 in the United States (*N* men = 3,601; *N* women = 4,278).

Keyes KM et al. Alc Clin Exp Res, Vol 43, Issue 8, August 2019, 1734-1746.

NYU About NYU Admissions Academics University Life Research Search

NYU › About NYU › News, Publications, and Facts › NYU News › 2019 › July › News Release

NEWS RELEASE

One in 10 Older Adults Currently Binge Drinks

Jul 31, 2019

Modified Jul 31, 2019

Posted in
Health and Medicine

Tagged
Research,
College of Global Public Health,
School of Medicine,
CDUHR

Men, Cannabis Users More Likely to Engage in This Risky Behavior

More than a tenth of adults age 65 and older currently binge drink, putting them at risk for a range of health problems, according to a study by researchers at NYU School of Medicine and the Center for Drug Use and HIV/HCV Research (CDUHR) at NYU College of Global Public Health.

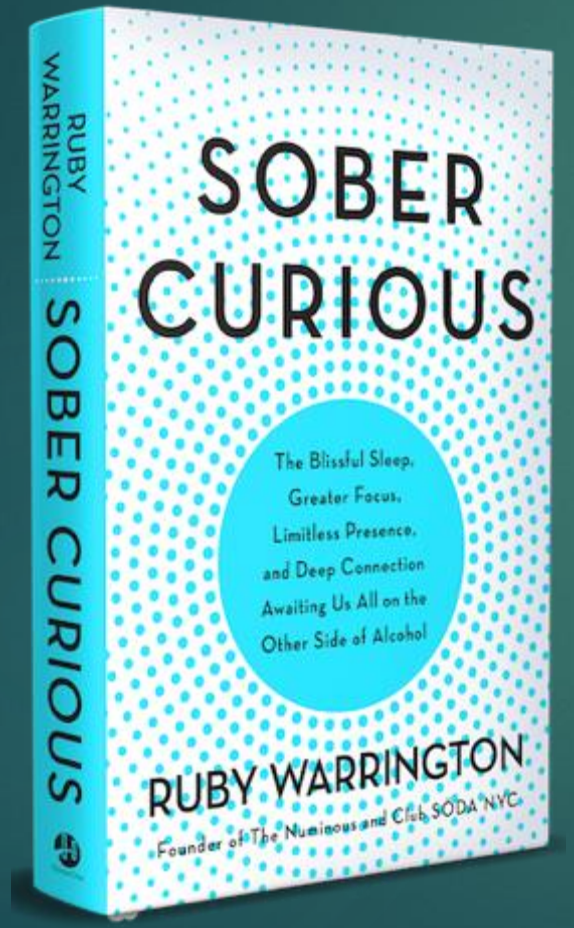
The study, published in the *Journal of the American Geriatrics Society*, also finds certain

© Getty Images

www.nyu.edu/about/news-publications/news/2019/july/one-in-10-older-adults-currently-binge-drinks.html

Moderation: In the Eye of the Beholder?

Sober Curious



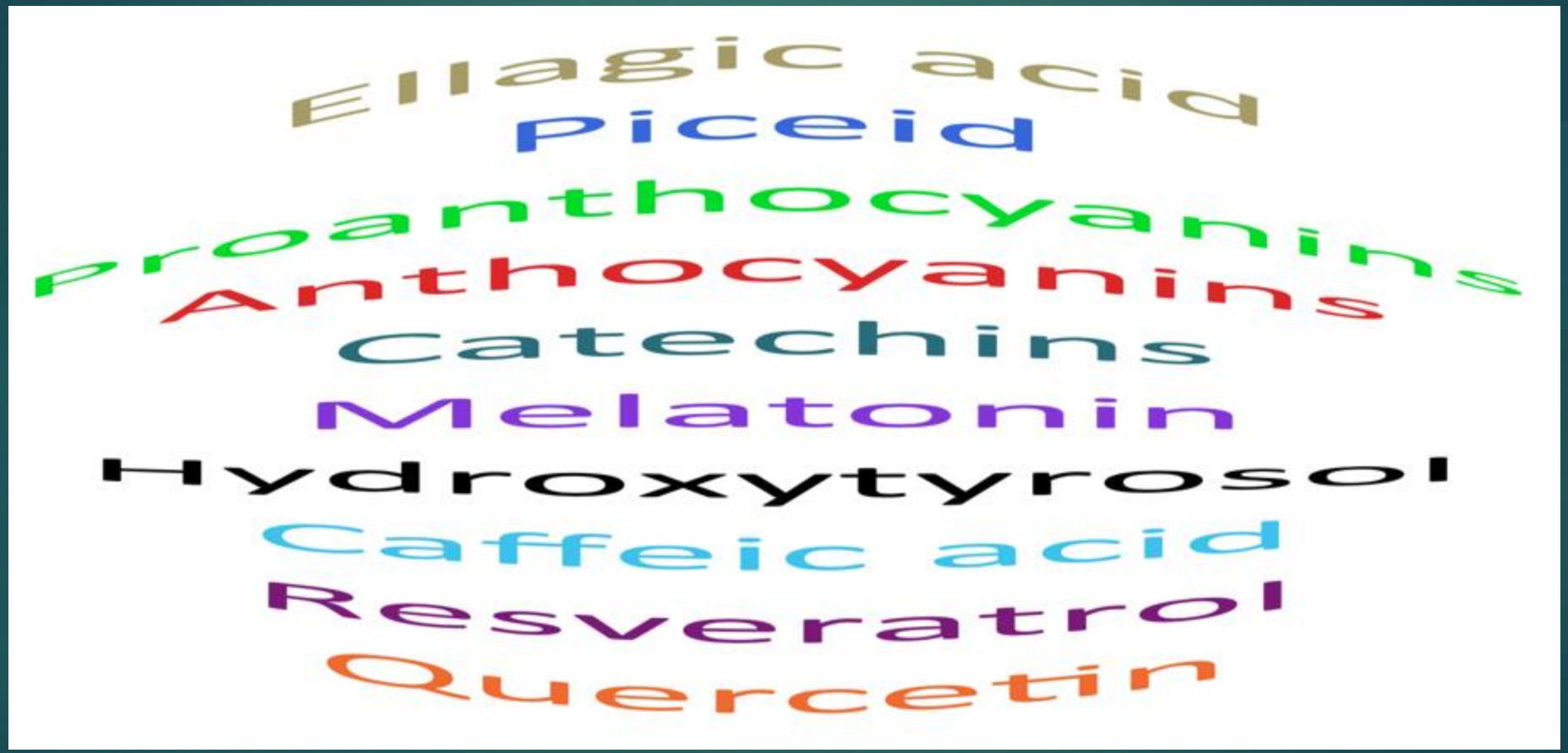
- ”Mindful drinking’
- ‘Temporary temperance’
- Hip sobriety, the New Black
- #soberissexy
- 12-step alternatives
- Nonalcoholic beverages

Want to live longer? Drink alcohol, new study says
– USA Today, July 13, 2019

Video source: JAMA

Figueira I, Menezes R, Macedo D, Costa I, Dos Santos CN. Polyphenols Beyond Barriers: A Glimpse into the Brain. Curr Neuropharmacol. 2017;15(4):562–594.

Synergy, Baby



5 Healthy Habits = 10+ Years

- No smoking
- Healthy weight
- Physical activity
- Quality diet
- Moderate alcohol

Li Y et al. Circulation. 2018;138:345-355

Mediterranean Drinking Pattern

- Meals, slowly
- Small amounts
- Other beverages
- Food rules
- Connection
- 1–2 non-drinking days / week

Food as Medicine

- Plant-based > meat
- Nuts, legumes, whole grains
- Olive oil rules
- Portion control
- Sharing and joy
- Alcohol in moderation

SOMM
SELECT

TRINCHERO
Family Estates

Wines & Websites

Mazzoni, Colline Novaresi Nebbiolo Del Monteregio, Piemonte, Italy, 2016

www.northberkeleyimports.com/wordpress/project/azienda-agricola-tiziano-mazzoni/

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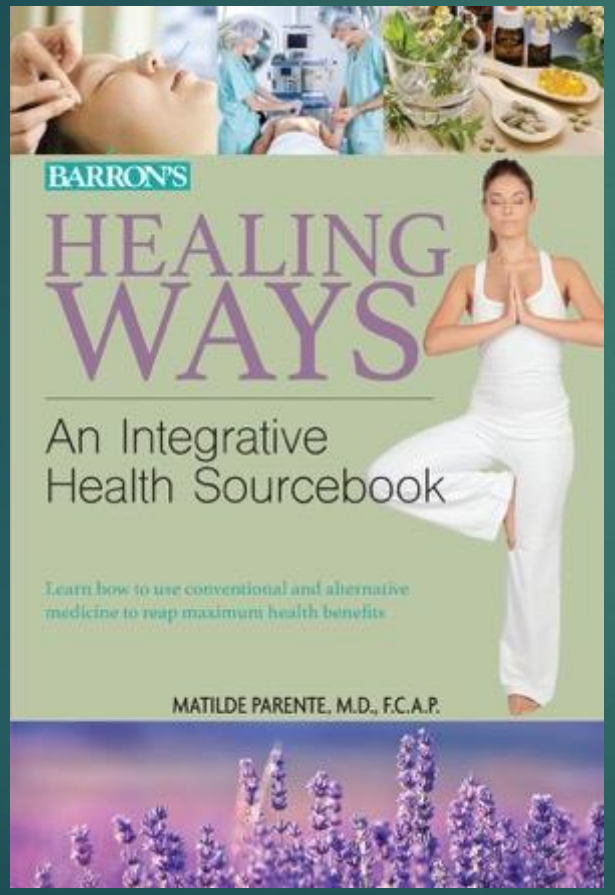
“Whether wine is a nourishment, medicine or poison is a matter of dosage.”

– Paracelsus

(1493–1541)

Thank You!



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