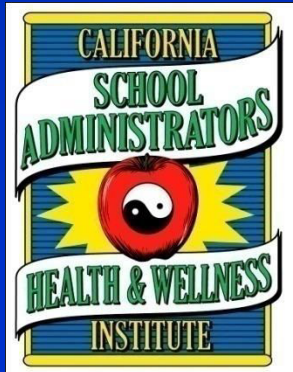


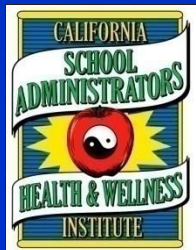
To Drink or Not to Drink? That Is the Question

Samer Kanaan, M.D.

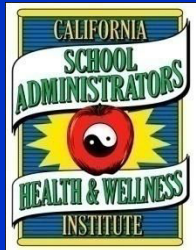


Goals

- Review Briefly my credentials and background
- **Heart Disease** – The Problem
- The **French Paradox**
- Review Heart-Health Benefits of **Red Wine Biology**
- Recommendations on **Red Wine** Consumption



Heart Disease



Diseases and Risk Factors	Both Sexes
Total Cardiovascular Disease	
Prevalence 2006**	80.0 M (36.3%)
Mortality 2005++	864.5 K
Coronary Heart Disease	
Prevalence 2006 CHD**	16.8 M (7.6%)
Prevalence 2006 MI**	7.9 M (3.6%)
Prevalence 2006 AP**	9.8 M (4.4%)
New and recurrent CHD* ##	1.26 M
New and recurrent MI##	935.0 K
Incidence AP (stable angina) #	500.0 K
Mortality 2005 CHD++	445.7 K
Mortality 2005 MI++	151.0 K

**Estimated 80 million
Americans have one or
more type of
Cardiovascular Disease →
1 in 3 American Adults**

Table 2-1. Cardiovascular Disease

Population Group	Prevalence, 2006 Age ≥20 y
Both sexes	80 000 000 (36.3%)
Males	38 700 000 (37.6%)
Females	41 300 000 (34.9%)
NH white males	37.8%
NH white females	33.3%
NH black males	45.9%
NH black females	45.9%
Mexican American males	26.1%
Mexican American females	32.5%

Table 2-1. Cardiovascular Disease

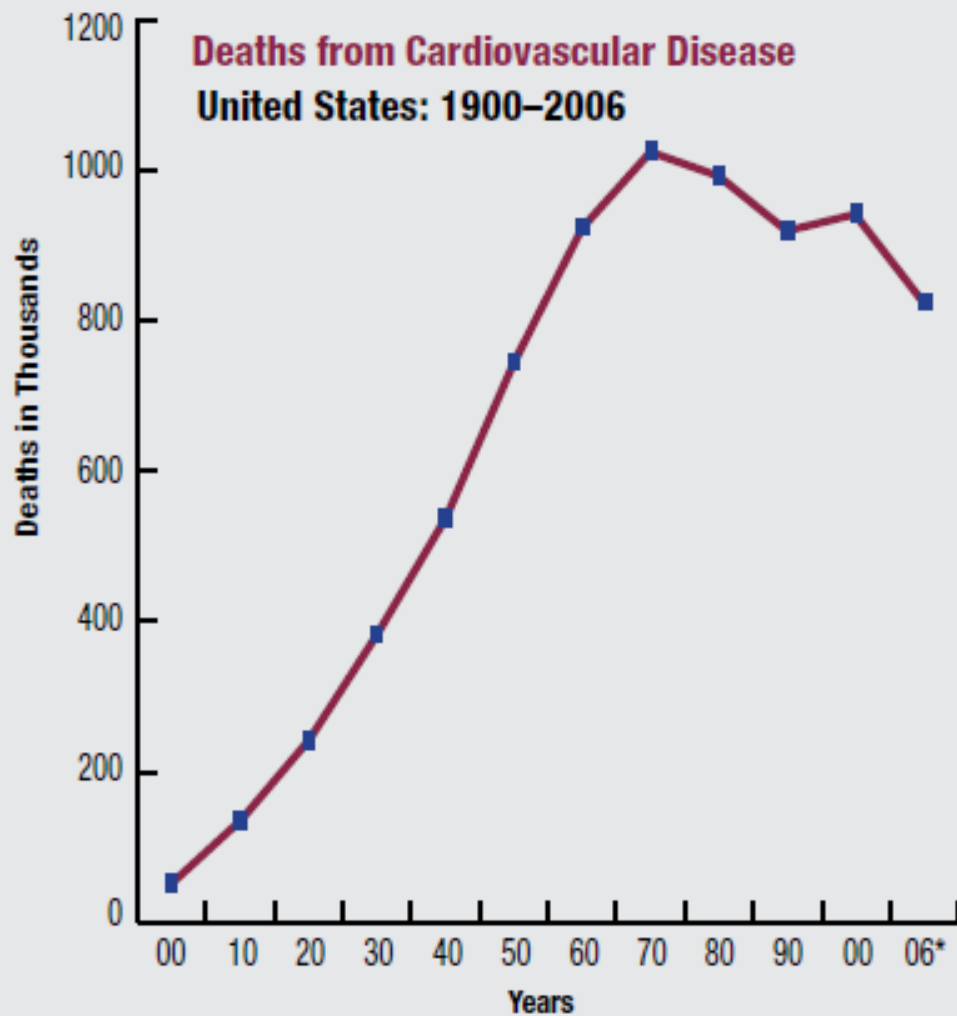
Population Group	Prevalence, 2006 Age ≥ 20 y	Mortality, 2005 All Ages*
Both sexes	80 000 000 (36.3%)	864 480
Males	38 700 000 (37.6%)	409 867 (47.4%)†
Females	41 300 000 (34.9%)	454 613 (52.6%)†
NH white males	37.8%	329 607
NH white females	33.3%	372 191
NH black males	45.9%	47 384
NH black females	45.9%	52 401

Cardiovascular Disease accounts for 35.3% of all deaths in 2005, or one of every 2.8 deaths in the United States.

2,400 Americans die of CVD each day → one death every 37 seconds

In every year since 1900 except 1918, CVD accounted for more deaths than any other cause.

Deaths from Cardiovascular Disease United States: 1900–2006



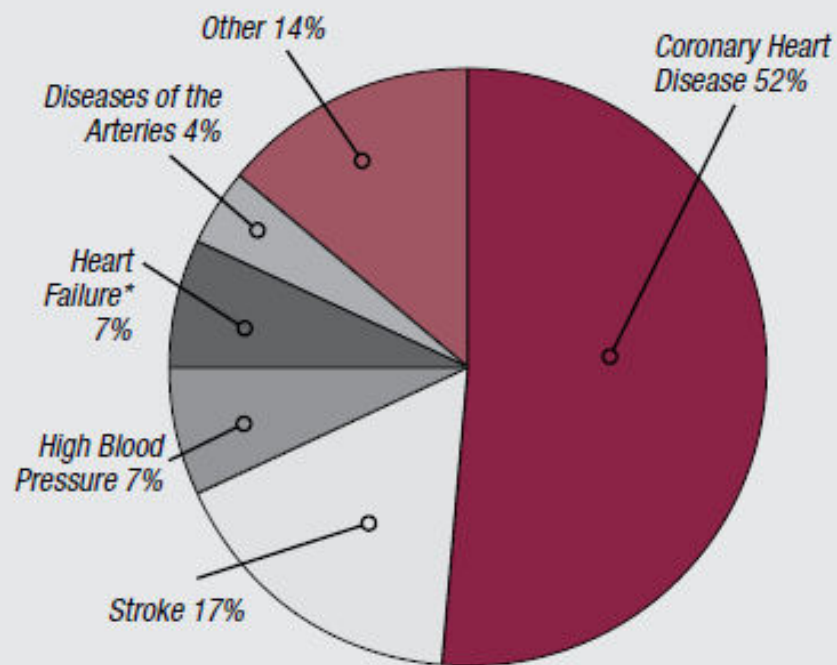
Source: NCHS.

Note: Cardiovascular disease does not include congenital heart disease.

*Preliminary

Percentage Breakdown of Deaths from Cardiovascular Diseases

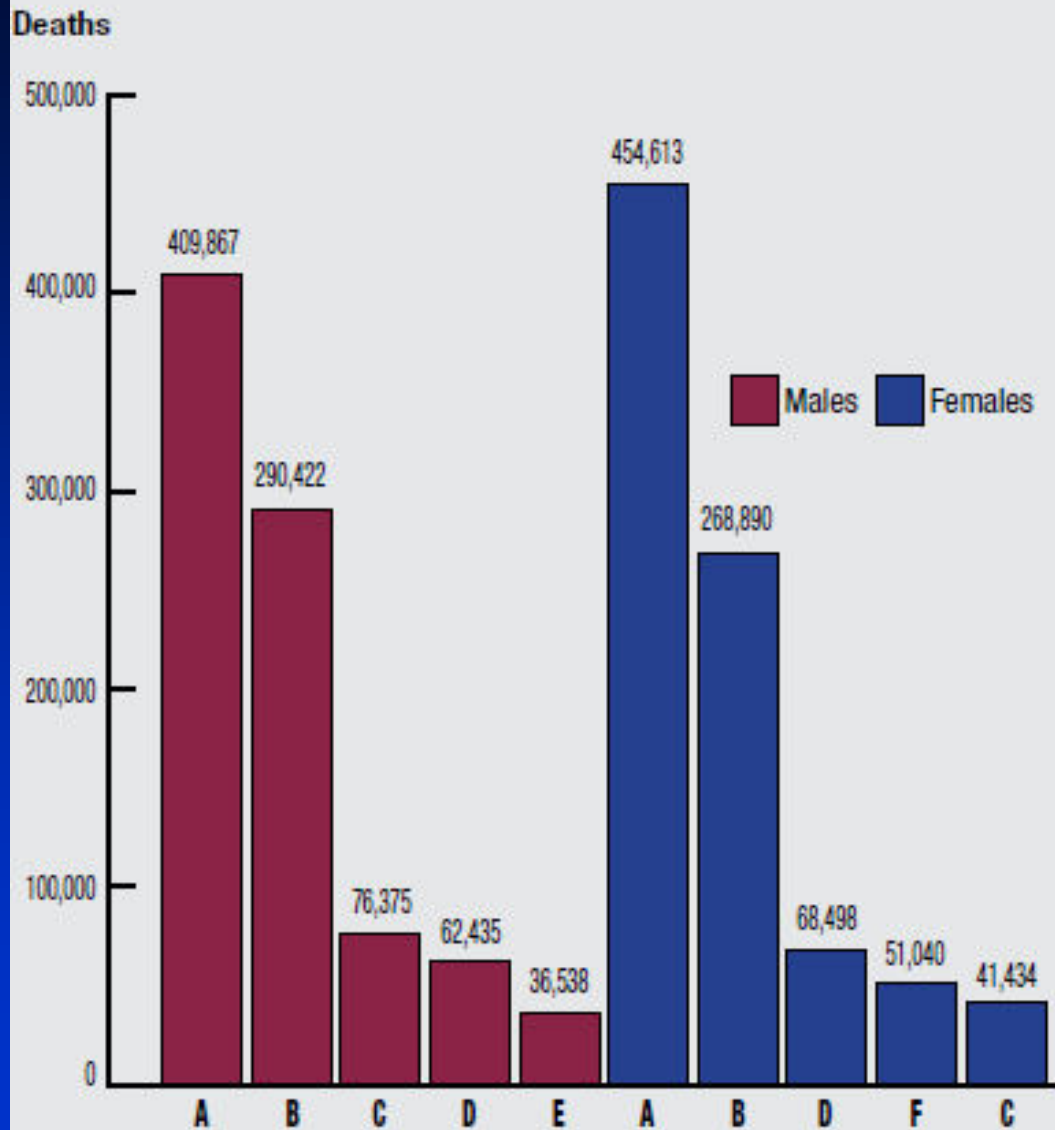
United States: 2006 (Preliminary)



Source: NCHS. *Not a true underlying cause.

Note: May not add to 100% due to rounding.

Cardiovascular Disease and Other Major Causes of Death for All Males and Females United States: 2005



Source: NCHS and NHLBI.

Cardiovascular Disease
claims more lives each year than
Cancer,
Chronic Lower Respiratory
Diseases,
Accidents, and
Diabetes Mellitus
COMBINED!

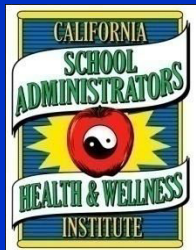
Males

CVD+Congenital Cardiovascular Defects	A
Cancer	B
Accidents	C
Chronic Lower Respiratory Disease	D
Diabetes	E

Females

CVD+Congenital Cardiovascular Defects	A
Cancer	B
Chronic Lower Respiratory Disease	D
Alzheimer's	F
Accidents	C

The French Paradox



History of Alcohol and Health

➤ Hippocrates

- Illustrated the value of wine as a medicine and vital to a healthy diet.

➤ Paracelsus (German physician 16th century)

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

➤ Thomas Jefferson

- “wine of long habit has become indispensable to my health”
- “I think it a great error to consider a heavy tax on wine as a tax on luxury. On the contrary, it is a tax on the health of our citizens.”

➤ Louis Pasteur

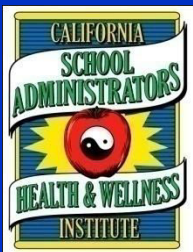
- “wine to be the most healthful and hygienic of beverages.”

➤ William Heberden – 1786 described angina pectoris

- “wines and spirituous liquors afford considerable relief”

Renaud and DeLongeril

- **Wine, alcohol, platelets, and the French paradox for coronary heart disease. *Lancet* 1992.**
 - **Mortality rate for coronary heart disease in France was paradoxical and unexpectedly lower than other industrialized countries, such as the United States and the United Kingdom, despite similarly high dietary intake of saturated fat and the prevalence of other risk factors, such as smoking.**
 - **The untoward effects of saturated fats are counteracted by the intake of wine.**
 - **“Epidemiological studies indicate that consumption of alcohol at the level of intake in France (20-30 g per day) can reduce risk of CH D by at least 40%”**



“J Curve”

T.M. Goldfinger / *Cardiol Clin* 21 (2003) 449-457

451

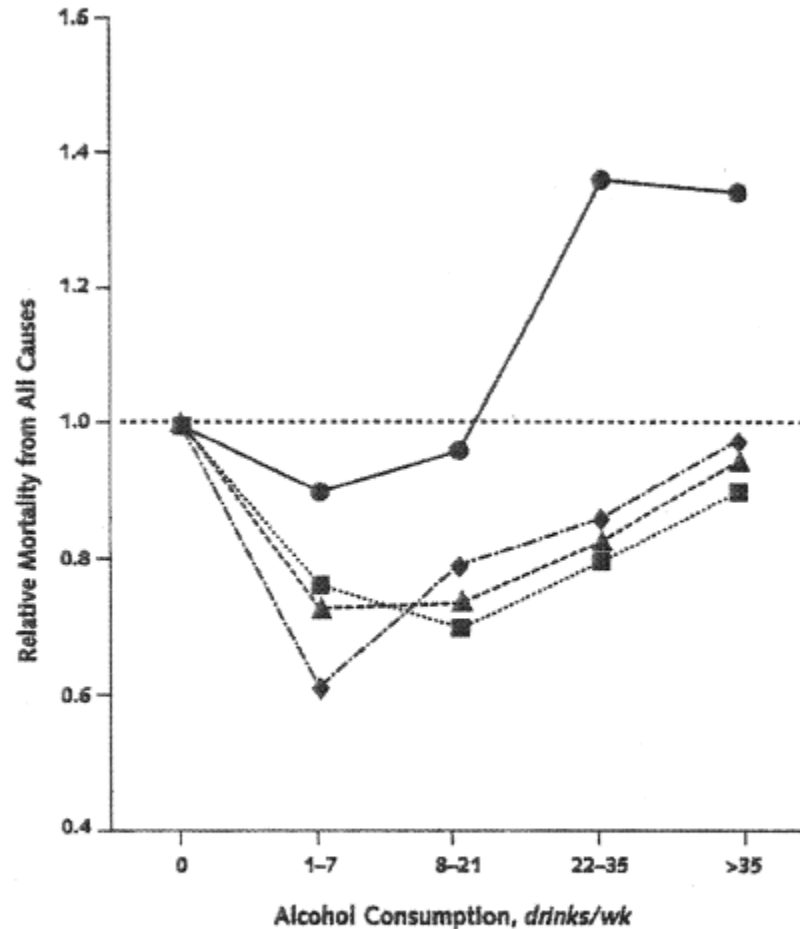


Fig. 1. Data pertain to non-wine drinkers (*circles*), wine drinkers (*triangles*), drinkers for whom wine made up 1% to 30% of their total alcohol intake (*diamonds*), and drinkers for whom wine made up more than 30% wine of their total alcohol intake (*squares*). Relative risk is set at 1.00 among nondrinkers (< 1 drink/wk). Estimates were adjusted for age, sex, educational level, smoking status, physical activity, and body mass index. (From Gronbaek M, Becker U, Johansen D, Gottschau A, Schnohr P, Hein HO, et al. Type of alcohol consumed and mortality from all causes, coronary heart disease, and cancer. *Ann Intern Med* 2000;133:411-9; with permission.)

“J Curve”

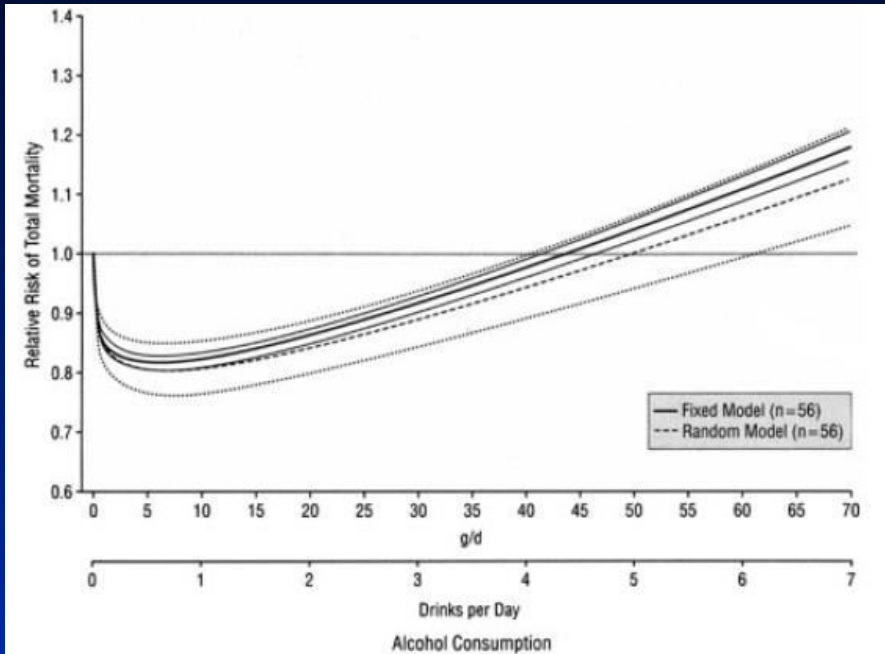


Figure 1. Risk of total mortality and 95% CIs for drinks of alcohol per day taken from 56 curves as part of a meta-analysis, using fixed and random-effects models. Reprinted from Di Castelnuovo et al,⁶ with permission from the publisher. Copyright © 2006, the American Medical Association.

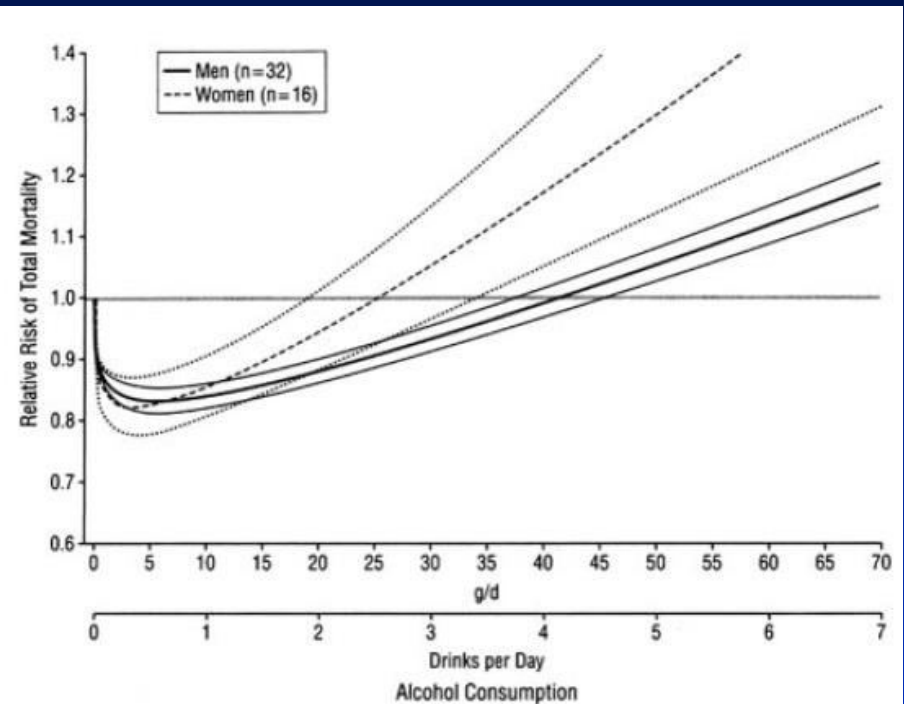
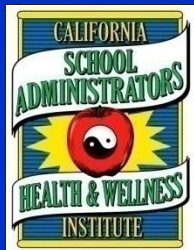


Figure 2. Relative risk of total mortality (99% CI) and alcohol consumption in men and women. Reprinted from Di Castelnuovo et al,⁶ with permission from the publisher. Copyright © 2006, the American Medical Association.



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Circulation 2007;116:1306-1317



Epidemiology

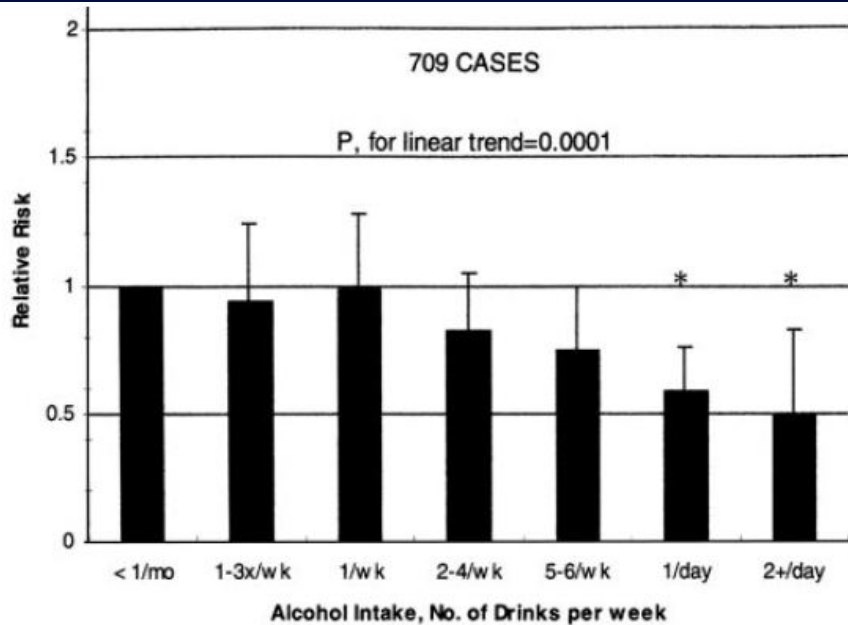


Figure 3. Relative risk (multivariate) of nonfatal myocardial infarction vs alcohol consumption. Vertical bars represent 95% CIs. The asterisks show those relative risks that were significantly <1 . Reprinted from Albert et al,¹⁶ with permission from the publisher. Copyright © 1999, the American Heart Association.

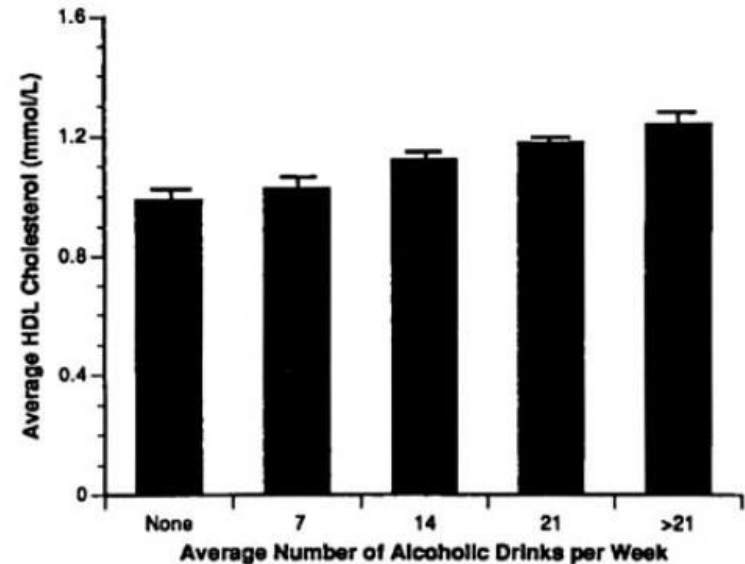
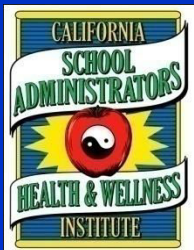


Figure 4. Average HDL cholesterol increases with alcohol consumption. Reprinted from Suh et al,⁵⁴ with permission from the publisher. Copyright © 1992, the American College of Physicians.



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Red Wine Biology

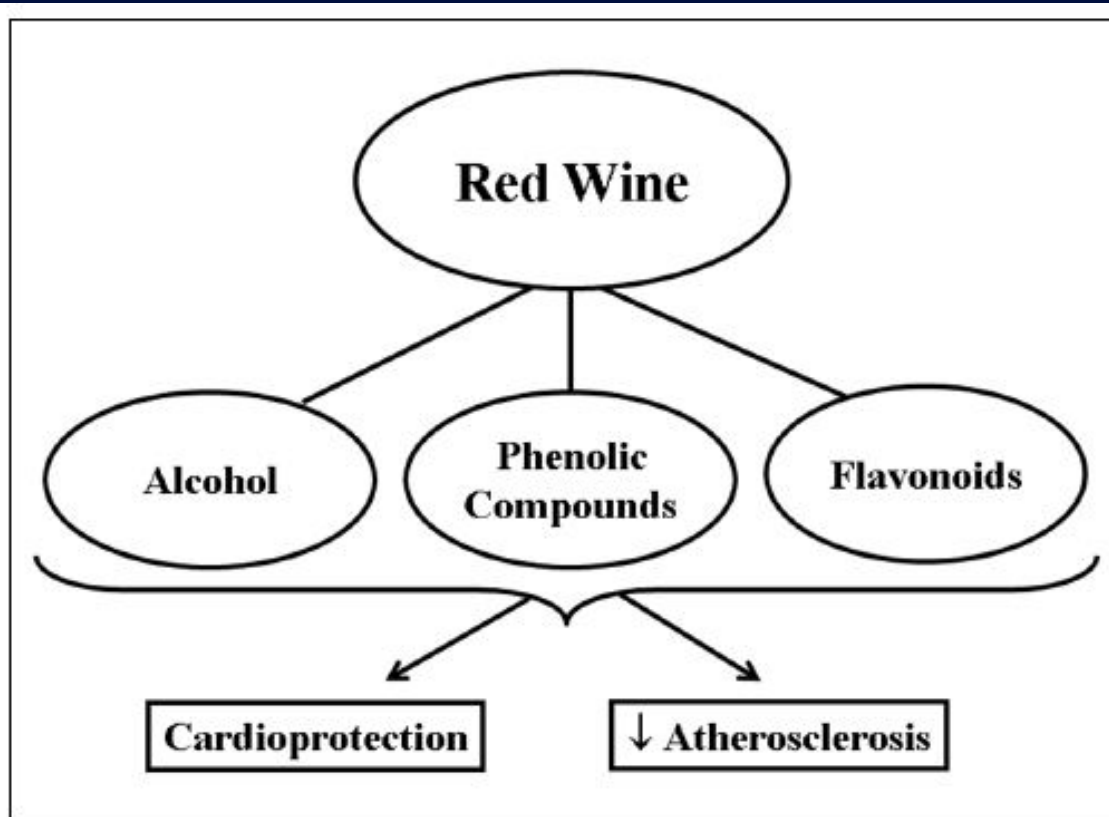
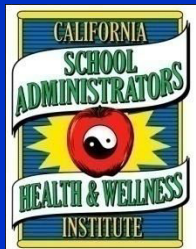


Figure 1) Red wine and its various components protect the heart from ischemia and/or reperfusion injury as well as attenuate atherosclerosis



S Das, DD Santani, NS Dhalla. Experimental evidence for the cardioprotective effects of red wine. *Exp Clin Cardiol* 2007;12(1):5-10.



Red Wine Polyphenols

Colour

Bitterness

Astringent Taste

Act as Preservatives

Antioxidants

Found in the skin and seeds

Two types:

Flavonoids

NonFlavonoids

Resveratrol

Red Wine produced by fermenting grape juice with the pulp

Vs

White Wine produced by fermenting without the pulp

Therefore:

Red Wine has much higher polyphenol content and higher level antioxidant activity

Table 3 Potentially active polyphenols in wine¹²⁵

Polyphenols have multiple aromatic rings possessing hydroxyl groups

A. Flavonoids

Anthocyanins: cyanidin, delphinidin (both as glycosides)

Flavonols: quercetin, as glycoside

Flavan-3-ols (not found as glycosides):

Monomers: *catechins*

Oligomers: *procyanidins*,¹¹¹

Polymers: proanthocyanidins (oligomers and polymers contain catechins and epicatechin)

B. Non-flavonoids

Resveratrol

Peceid, conjugated resveratrol glycoside

Gallic acid

Others

The italicized polyphenols are those most clearly linked to beneficial changes in cardiovascular experiments.



European Heart Journal (2007) 28, 1683-1693
doi:10.1093/eurheartj/ehm149

Review

The red wine hypothesis: from concepts to protective signalling molecules

Lionel H. Opie* and Sandrine Lecour

Department of Medicine, Faculty of Health Sciences, Hatter Cardiovascular Research Institute, University of Cape Town, Private Bag 3, 7935 Observatory, South Africa

Red Wine Biology

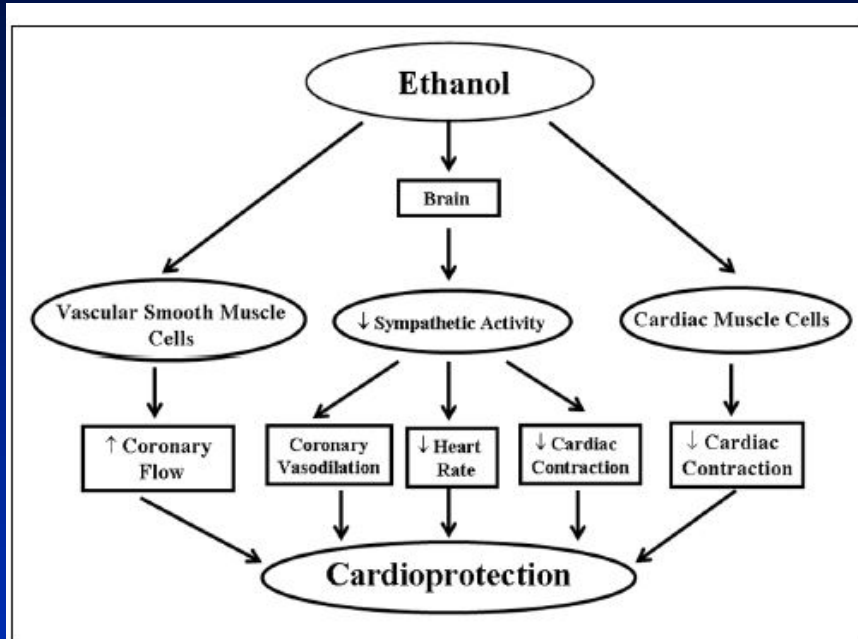


Figure 2) Proposed events for ethanol-induced cardioprotection

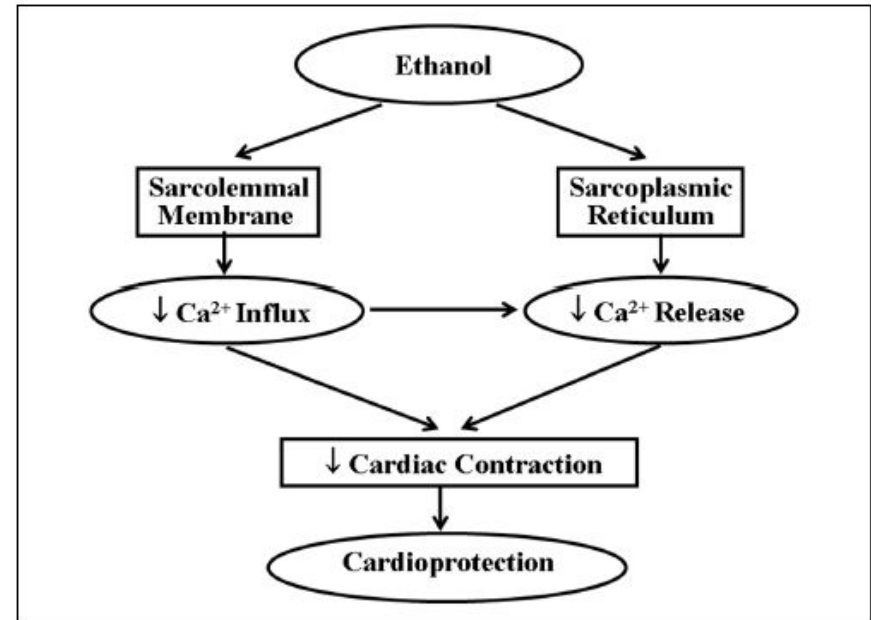


Figure 3) Molecular mechanisms of the effect of ethanol leading to cardioprotection where sarcolemmal membrane and Ca^{2+} play an important role

Red Wine Biology

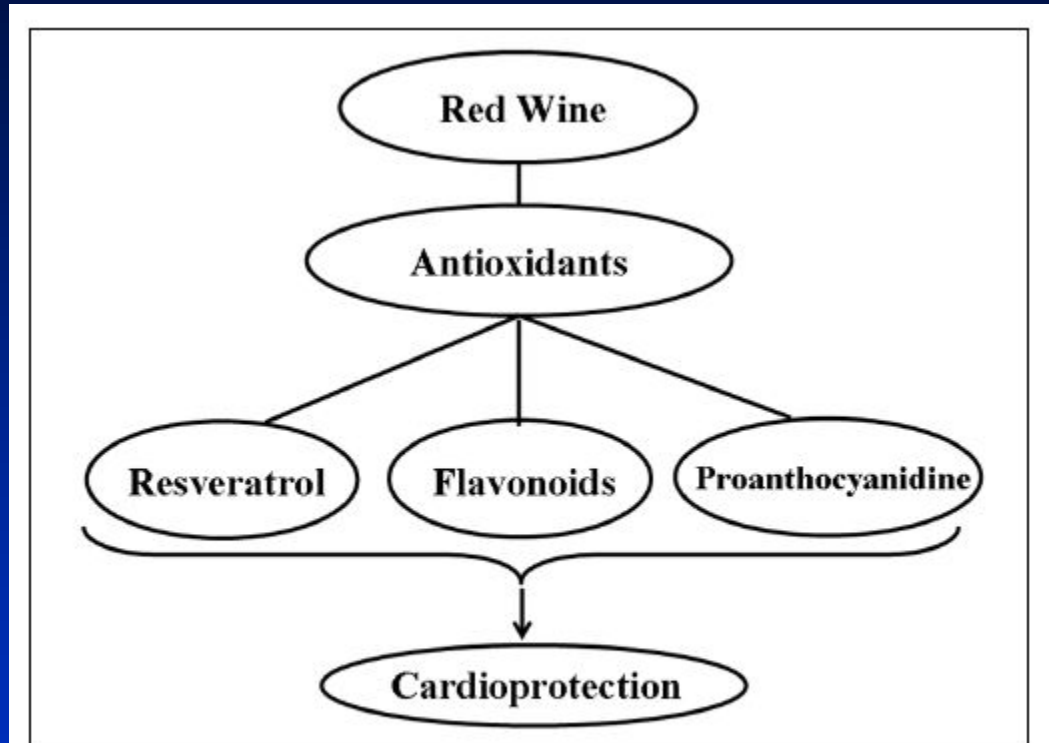


Figure 4) Some major polyphenols and flavonoids in red wine which protect the heart

S Das, DD Santani, NS Dhalla. Experimental evidence for the cardioprotective effects of red wine. *Exp Clin Cardiol* 2007;12(1):5-10.

Red Wine Biology

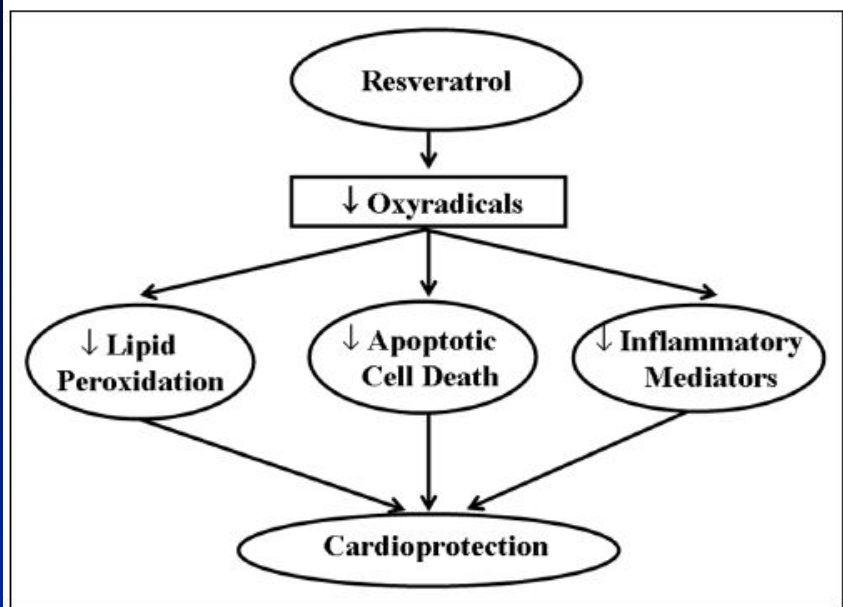


Figure 5) The cardioprotective effect of resveratrol by scavenging oxyradicals

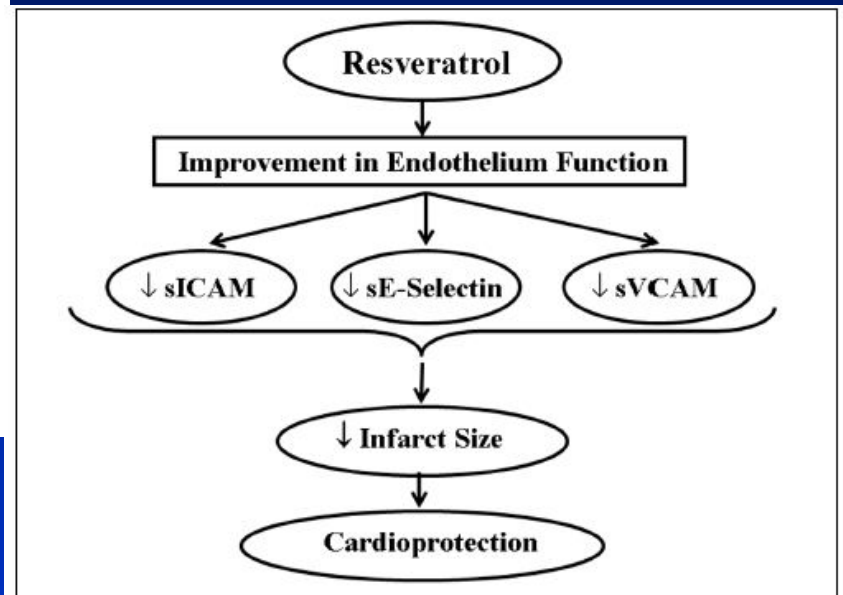
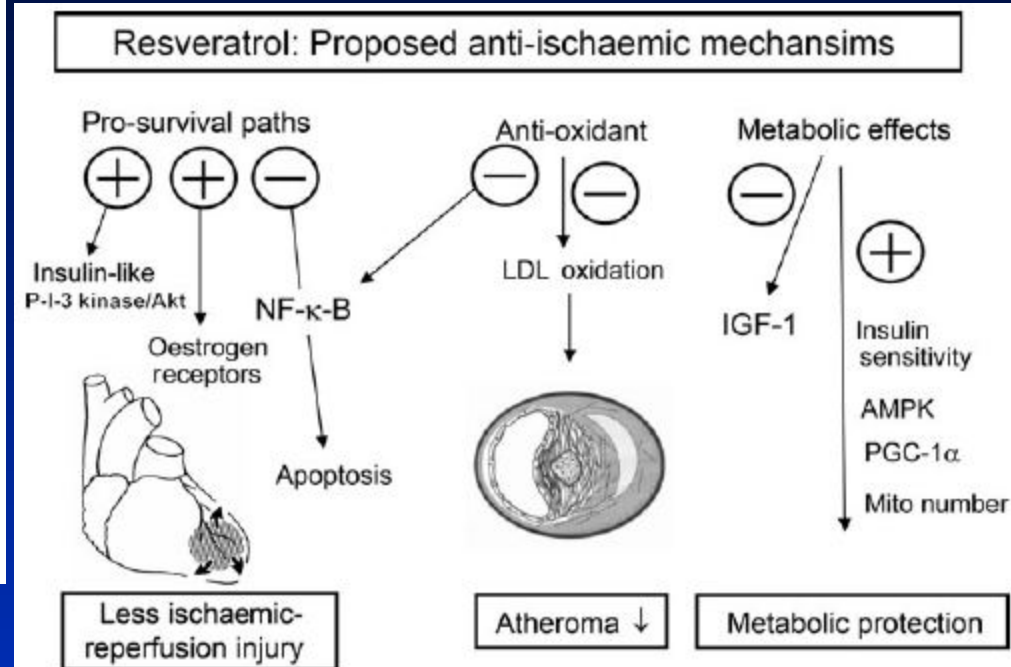
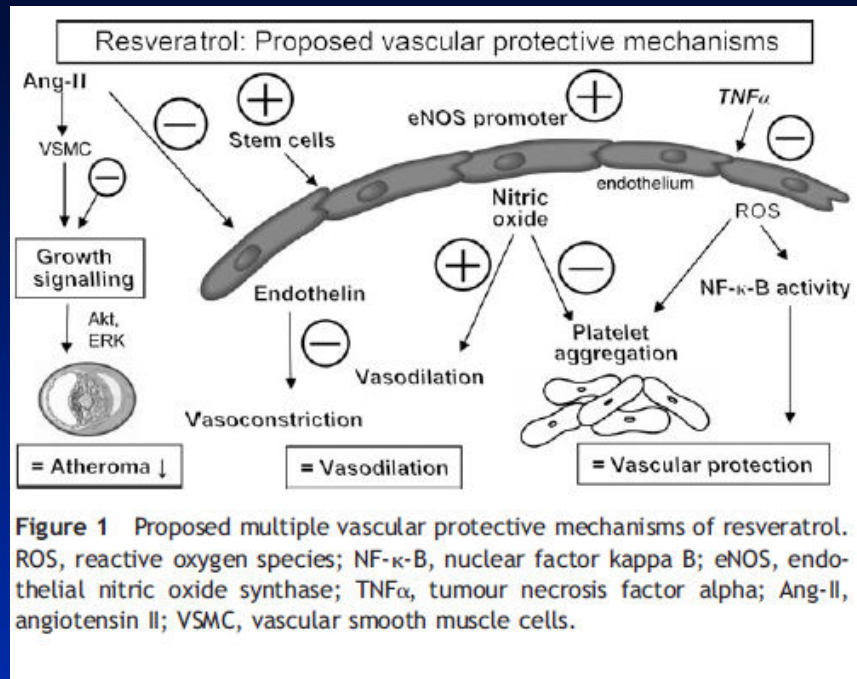


Figure 6) Improvement of endothelium function by resveratrol that ultimately leads to cardioprotection. sICAM Soluble intracellular cell adhesion molecule; sVCAM Soluble vascular cell adhesion molecule

Red Wine Biology



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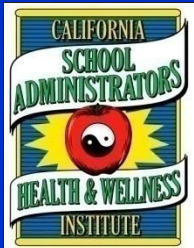
Caution

- **Increase Triglycerides**
- **Result in Weight Gain** – empty calories
- **Cancer Risk**
- **Pregnancy – NO!**
- **Gout**
 - Red wine increases blood uric acid levels.
- **Alcoholic Cardiomyopathy / Heart Failure / Cardiac Arrhythmias / Sudden Cardiac Death**
- **Atrial Fibrillation**
 - Limit to less than 35 drinks / week
- **Hypertension**
 - Limit to two drinks / day for males
 - Limit to one drink / day for females
- **Drug interactions**
 - Nitroglycerin, anxiolytics, neuroleptics, and oral contraceptives.



Summary

- **Red Wine Benefits:**
 - **Antioxidant**
 - **Cardioprotective**
 - **Lowers risk of heart attack – by 30-50%**
 - **Raises HDL cholesterol (good one)**
 - **Prevents LDL cholesterol from forming (bad one)**
 - **Prevents blood clots**
 - **Reduces blood vessel damage caused by fat deposits**



AHA Recommendations

- **NOT** to start drinking if you do not already drink alcohol
- If you drink already, Drink in **MODERATION**
 - 2 drinks a day for men
 - 1 drink a day for women

TABLE 1. Common Definition of a Standard Alcoholic Drink in the United States¹

≈0.6 fl oz of alcohol
≈17.74 mL of alcohol
≈14 g of alcohol
≈12 oz of beer
≈5 oz of wine
≈1.5 oz or a “shot” of 80-proof distilled spirits or liquor (gin, rum, vodka, whiskey)

- Alcohol use should be an item of discussion between physician and patient

