



**ALIMENTI “FUNZIONALI”
DEL PASSATO:
IMPORTANZA
DELL’EVIDENZA
SCIENTIFICA NELL’UOMO**

**Mauro Serafini Ph.D.
CRA Ricerca Alimenti e Nutrizione,
Roma**

Consumer Awareness

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FIRST LIGHT FOOD

All-Star Foods That Fight for Health

It's no secret that an apple a day—along with other fruits, vegetables, and nuts—will help keep the doctor away. These foods are loaded with antioxidants, substances that fight free radicals, disease-causing compounds that have been linked to heart disease, cancer, and Alzheimer's. But just how many antioxidants these foods contain has been a mystery—until now. The Department of Agriculture (USDA) recently analyzed the antioxidant content of more than 100 foods, including fruits, vegetables, nuts, fruits, spices, and cereals.

Many spices and herbs like cinnamon and oregano pack a potent antioxidant punch.

Find easy ways to add power foods to your diet at CookingLight.com/features.

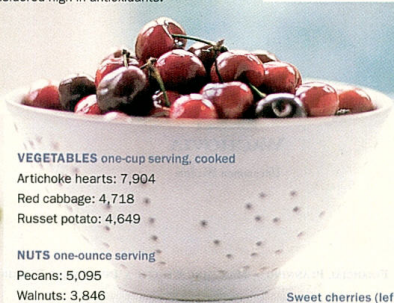
Strawberries and blackberries contain some of the highest antioxidant levels of foods measured by the USDA.

Antioxidant Breakdown

The U.S. Department of Agriculture ranked the following foods among the highest in antioxidant content. The number after each food denotes its total antioxidant capacity (TAC). Foods with TACs of 2,000 or higher, like these, are considered high in antioxidants.

FRUITS one-cup serving

- Dried Plums: 14,582
- Cultivated blueberries: 9,019
- Blackberries: 7,701



VEGETABLES one-cup serving, cooked

- Artichoke hearts: 7,904
- Red cabbage: 4,718
- Russet potato: 4,649

NUTS one-ounce serving

- Pecans: 5,095
- Walnuts: 3,846
- Hazelnuts: 2,739

Sweet cherries (left) clock in with a TAC of 4,873 per cup.

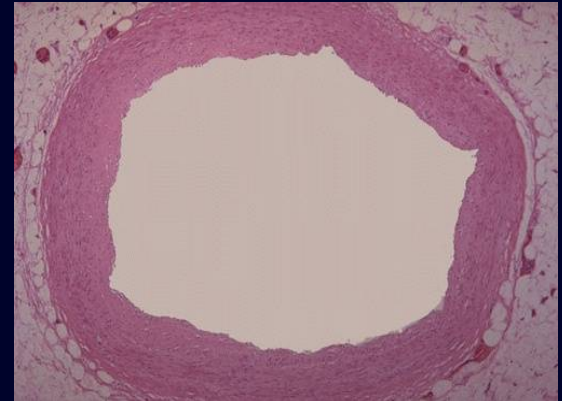
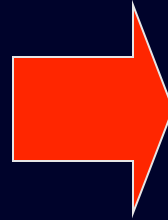


off the mark by Mark Parisi
www.offthemark.com



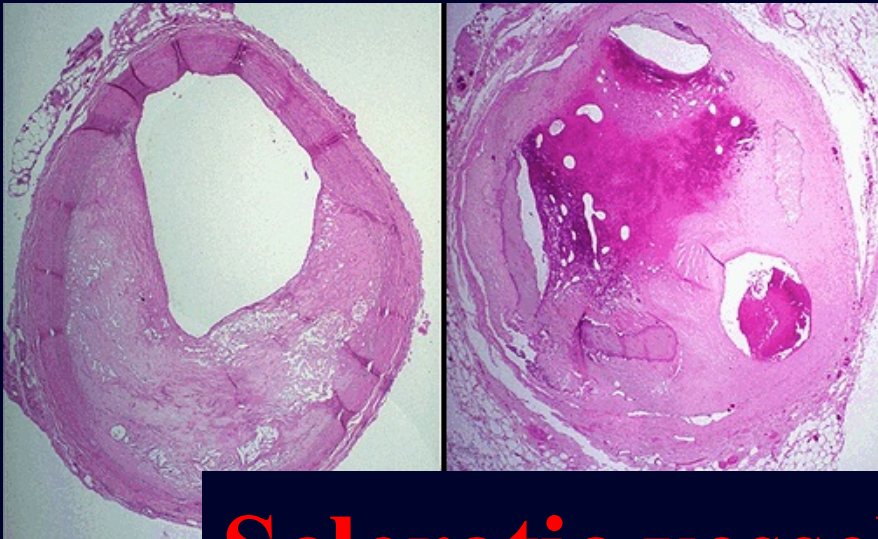


Normal vessel

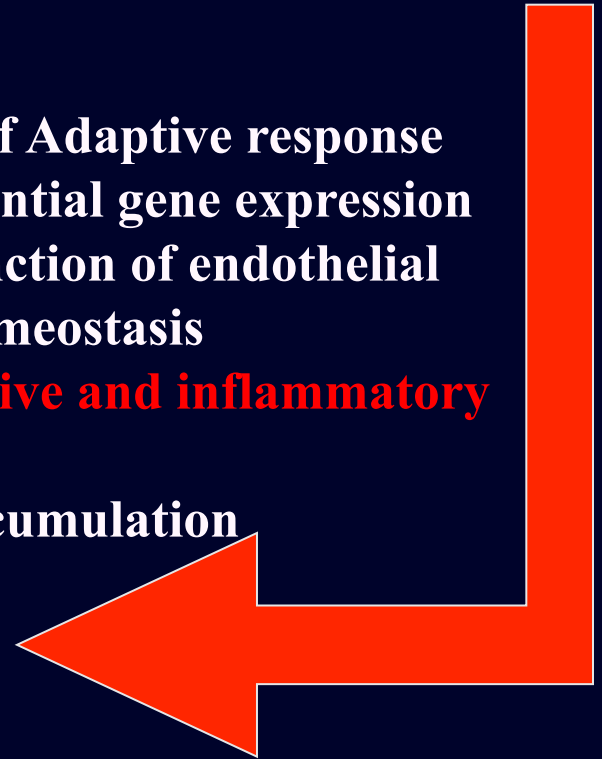


Stressors: Free Radicals, Cytokines, Fat, Sugars, Physical inactivity

- Lack of Adaptive response
- Differential gene expression
- Dysfunction of endothelial cell homeostasis
- Oxidative and inflammatory stress**
- Fat accumulation



Sclerotic vessel



OXIDATIVE/INFLAMMATORY STRESS

**Oxid/Inflam
stress**

**“Functional
balance”**



SUBJECTS

- ✓ **Fifteen Healthy Overweight**
- ✓ **BMI 25-30 Kg/m²**
- ✓ **Age 30-55 years**
- ✓ **Non-smokers**
- ✓ **No drug or vitamin supplements**

STUDY DESIGN

2 Days wash-out

HFM p

Group A (n = 8)

HFM 2.4.5

Group B (n = 8)



Blood sampling (0, 0.5, 1, 2, 4, 6 and 8 h)
Urine sampling (0-8, 8-12 and 12-24 h)

10 Days wash-out

Phases 2

STRESSOR MEAL



Total Energy: 1351 kcal

Fat : ~ 55 % E°

Protein : ~ 29 % E

Carbohydrates : ~ 15 % E°

- ✓ **Cheese (90g)**
- ✓ **Bread (90g)**
- ✓ **Potatoes (212g)**
- ✓ **Sunflower oil (32g)**
- ✓ **Whole eggs (108g)**

FJ

63% Juice

blend:

Pineapple

Blackcurrant

Plum

Extracts:

Pineapple

flavour

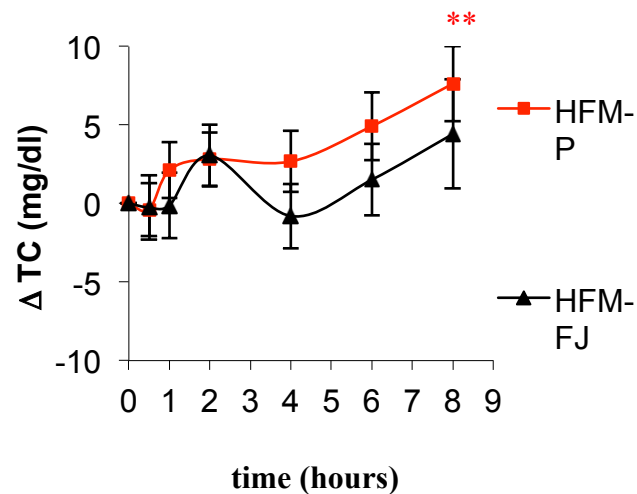
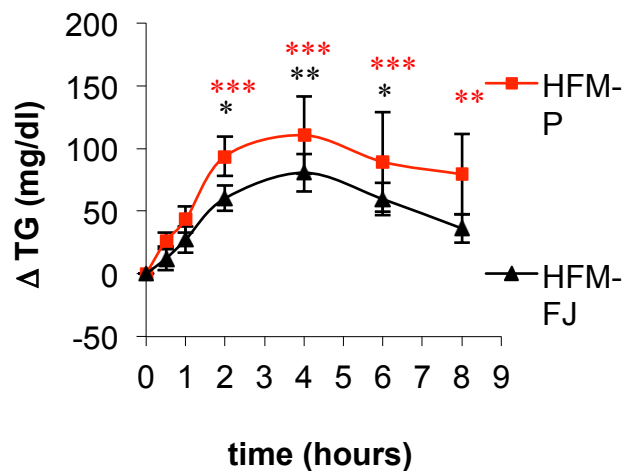
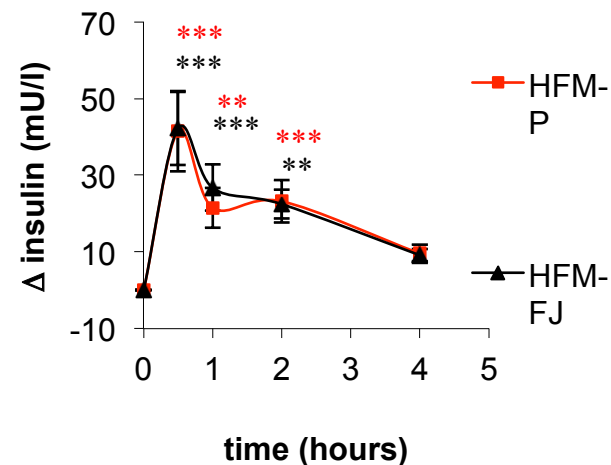
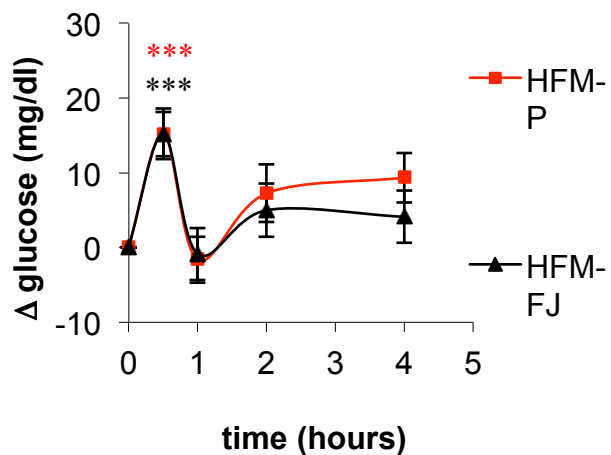
Plum flavour

Compound	mg/L
Anthocyanins	32.0
Hydroxycinnamates	0.5
Flavan-3-ols	2.5
Flavonols	20.0
Total Flavonols	795



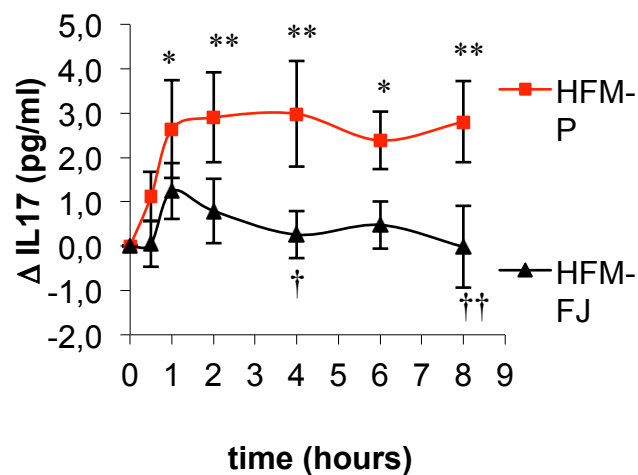
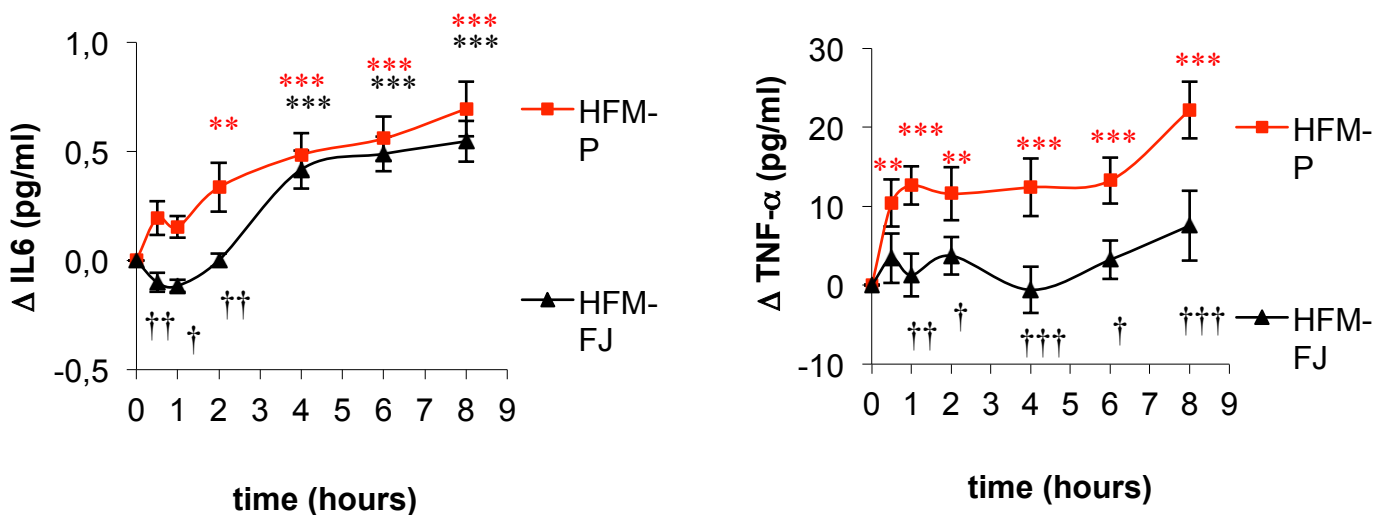
High Fat Meal Increase of IL-17 is Prevented by Ingestion of Fruit Juice Drink in Healthy Overweight Subjects

Ilaria Peluso¹, Anna Raguzzini¹, Debora V Villano², Eleonora Cesqui¹, Elisabetta Toti¹, Giovina Catasta¹ and Mauro Serafini^{1,*}

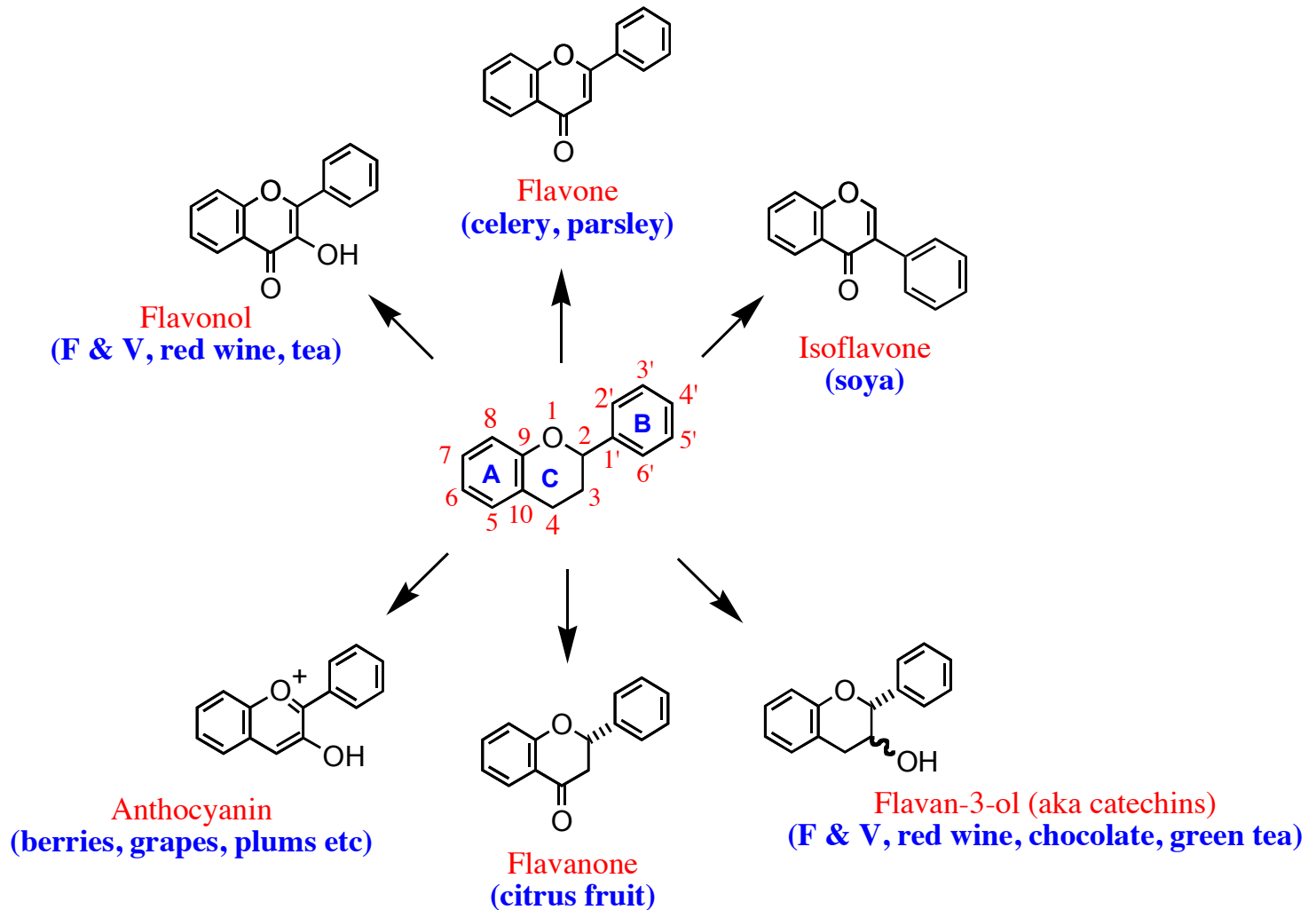


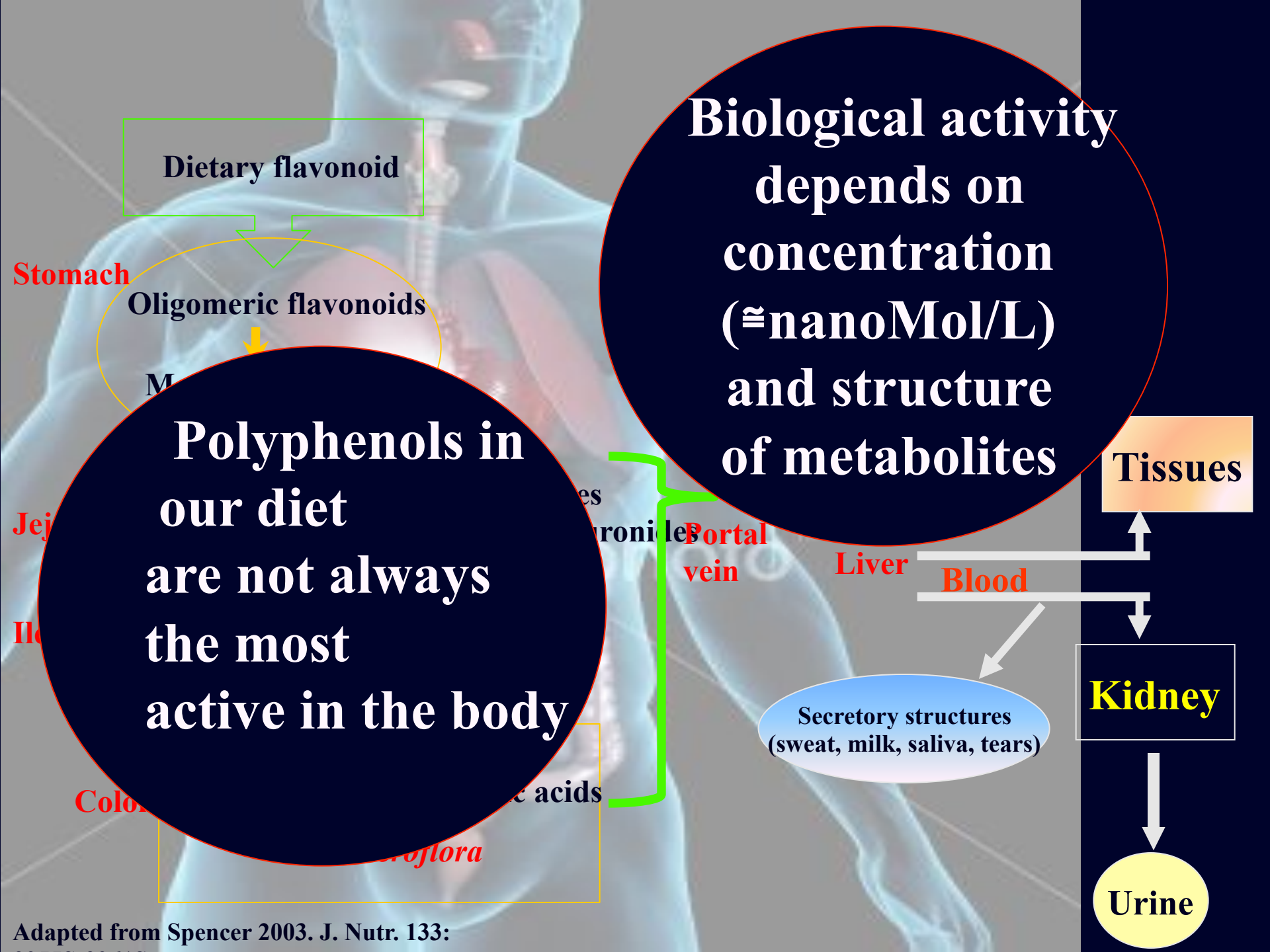
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Common C₆-C₃-C₆ Flavonoid Structures



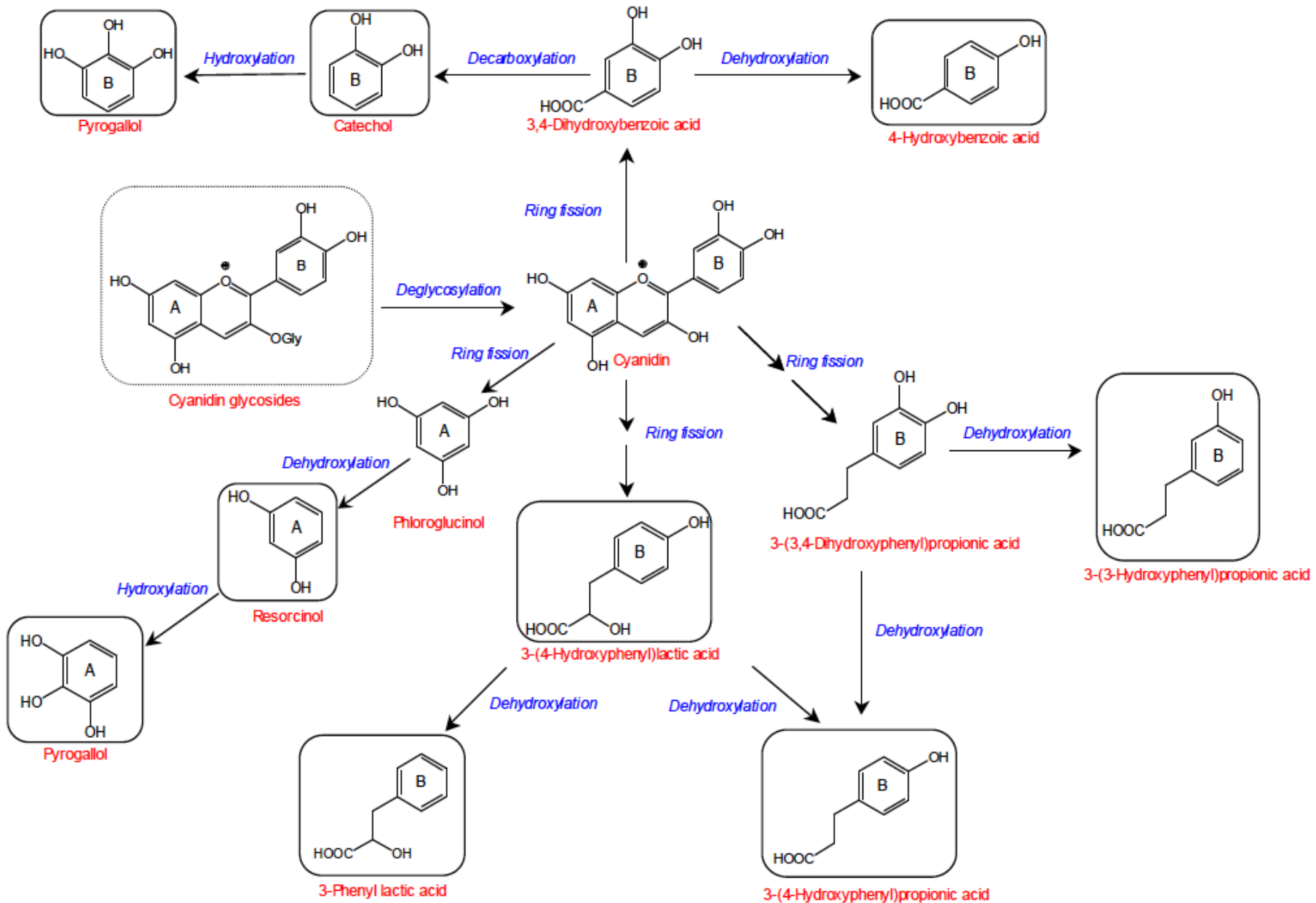


Biological activity depends on concentration (\approx nanoMol/L) and structure of metabolites

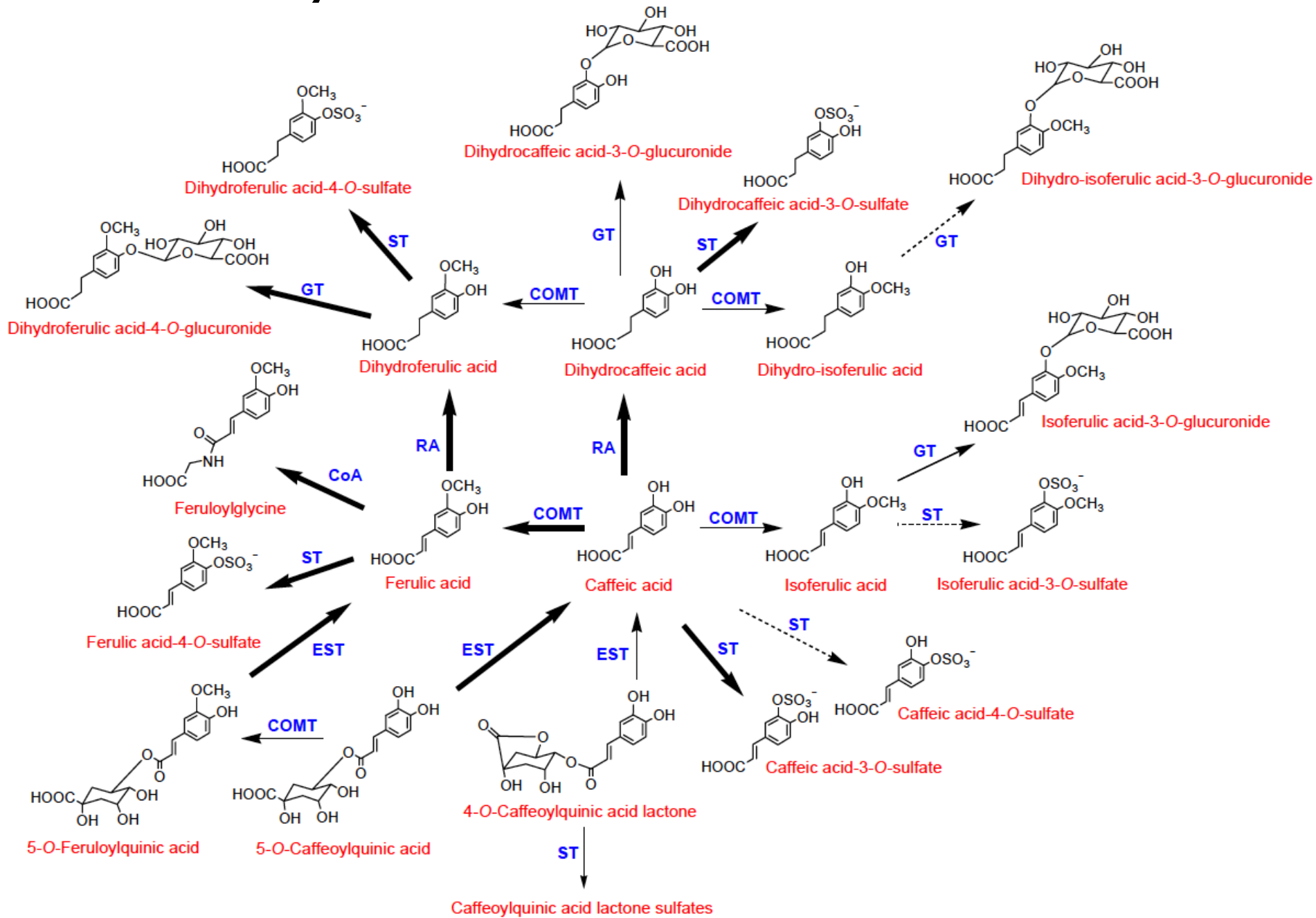
Polyphenols in our diet are not always the most active in the body

Adapted from Spencer 2003. J. Nutr. 133:

You eat berries?




You fancy a coffee?

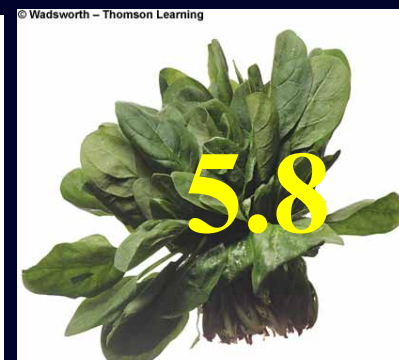
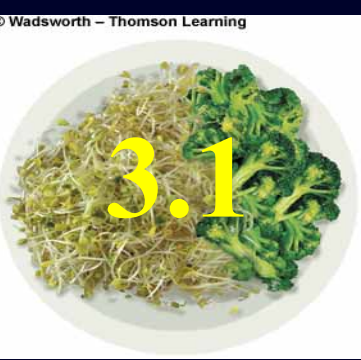


How should we assess the effects of exposure to dietary polyphenols in vitro?^{1–3}

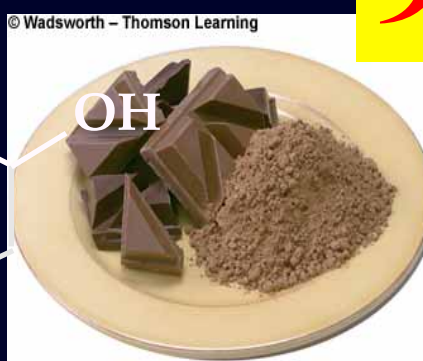
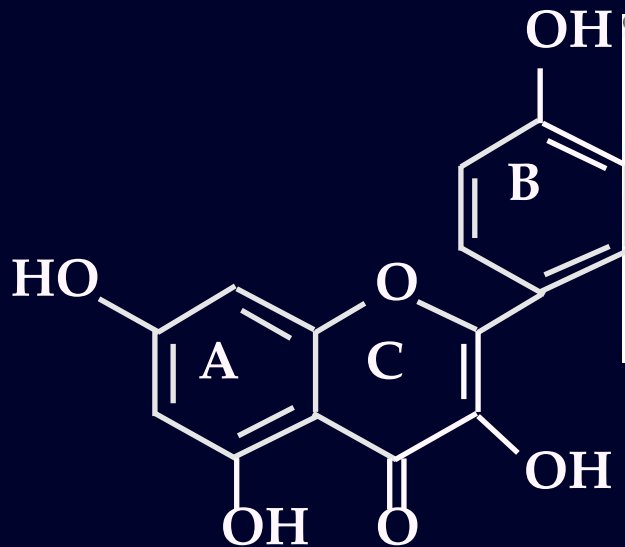
Paul A Kroon, Michael N Clifford, Alan Crozier, Andrea J Day, Jennifer L Donovan, Claudine Manach, and Gary Williamson

Identification and measurement of the physiologic polyphenol conjugates are key prerequisites to an understanding of the role of dietary polyphenols in human health. Acquiring such data will permit more reliable investigation of many phenomena by using cost-effective in vitro models. In the long term, the application of advanced metabolomic approaches and nanotechnologies has the potential to significantly advance our understanding in this area

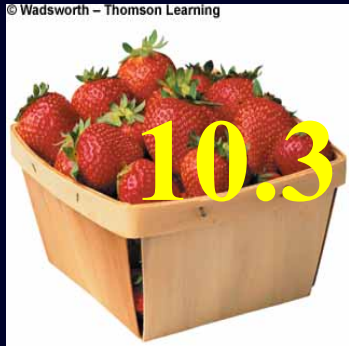
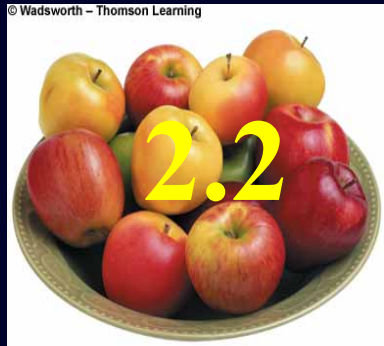
We strongly recommend that all experiments using in vitro models to study biological responses to dietary polyphenols use only physiologically relevant flavonoids and their conjugates at appropriate concentrations, provide evidence to support their use, and justify any conclusions generated. When authors fail to do this, referees and editors must act to ensure that data obtained in vitro are relevant to what might occur in vivo. 



Redox ingredients



91.5



NEAC in Vitro

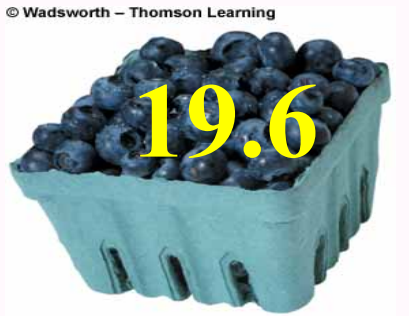
Ingested

In vivo increase



18.200 μmol Trap
(100 g)

+ 20%



3.930 μmol Trap
(200 g)

+ 12%



1.150 μmol Trap
(250 g)

+ 50%



690 μmol Trap
(80 g)

No changes

In Vitro values

% of absorption in vivo

Cumaric acid

7300 $\mu\text{g}/250 \text{ g}$

1.1 %

Caffeic acid

31700 $\mu\text{g}/250 \text{ g}$

0.2 %

Quercetin

12700 $\mu\text{g}/250 \text{ g}$

0.5%

Vitamin C

26.7 $\text{mg}/250 \text{ g}$

49 %

SUBJECTS



- ✓ **Twelve healthy volunteers**
(25-35 y, 7 W 5 M)
- ✓ **Non smokers, normolipidemic**
- ✓ **No drug or vitamin supplements**

STUDY DESIGN

CK
(100 g)

Group A (n = 4)



CKM
(200 g)

Group B (n = 4)



CK + M
(100 g + 200 mL)

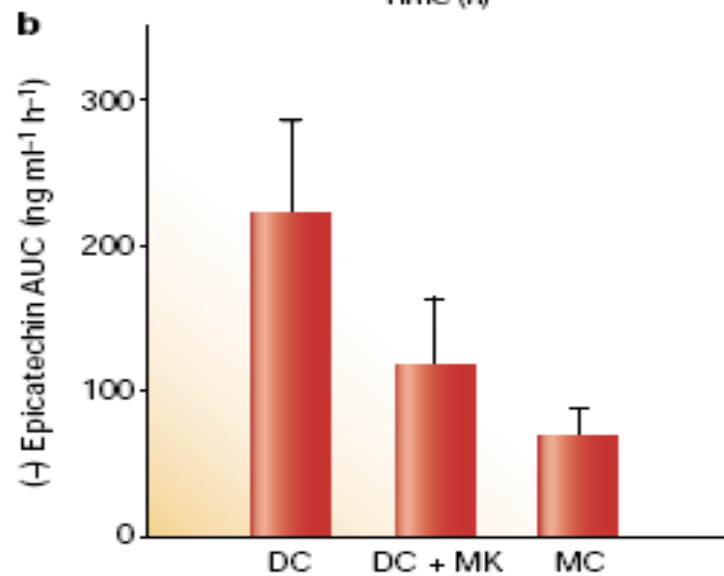
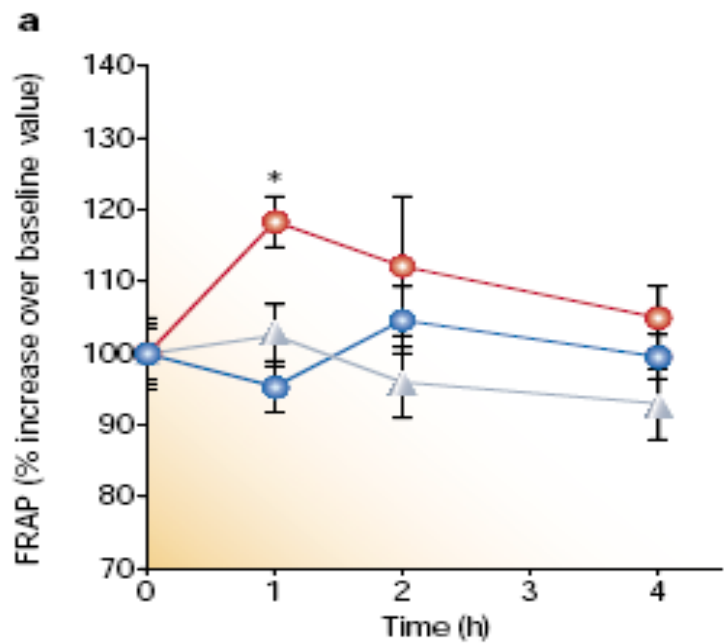
Group C (n = 4)



Blood sampling (0, 1, 2 and 4 h.)

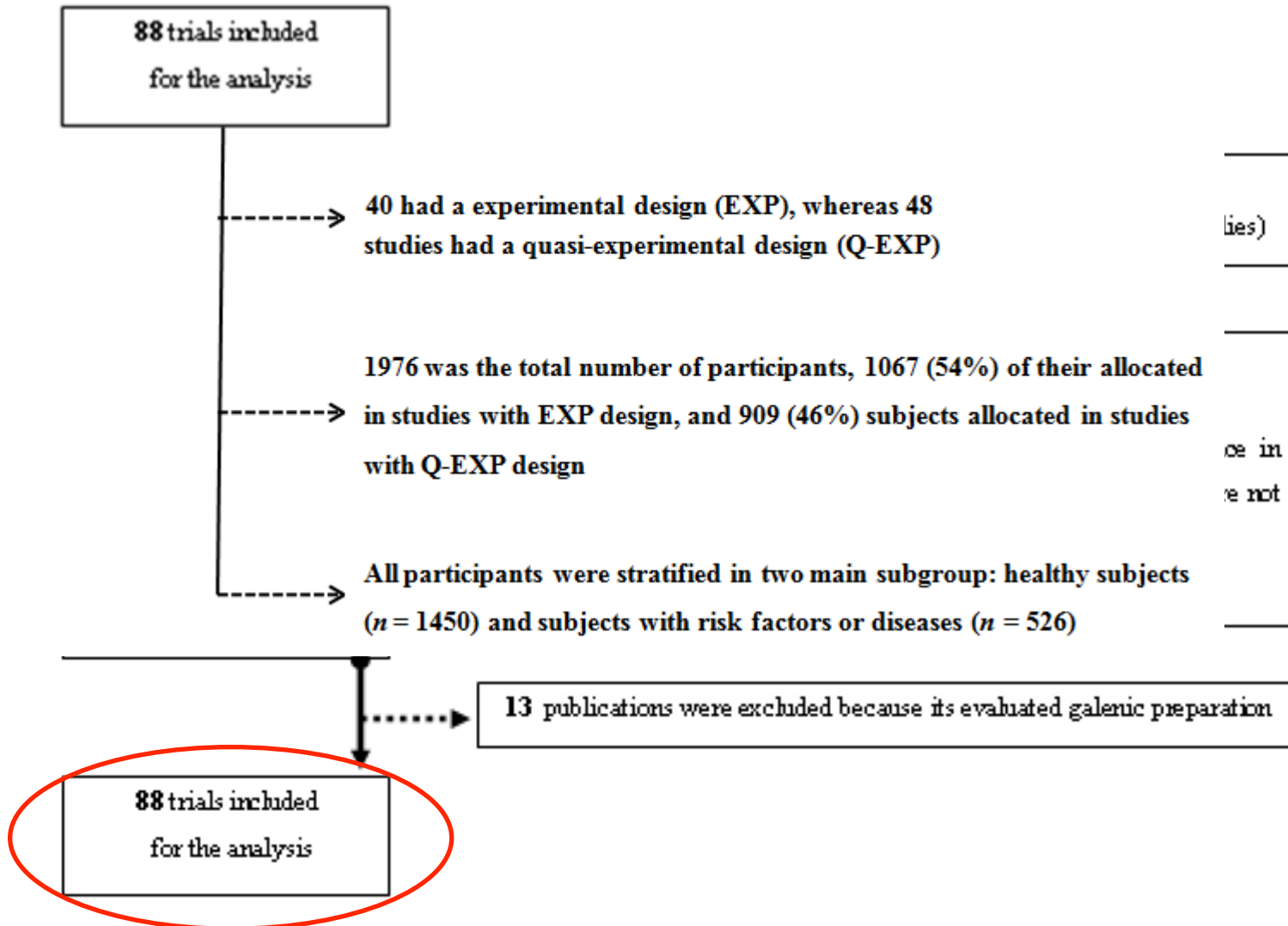
7 Days wash-out

Phases 2 and 3



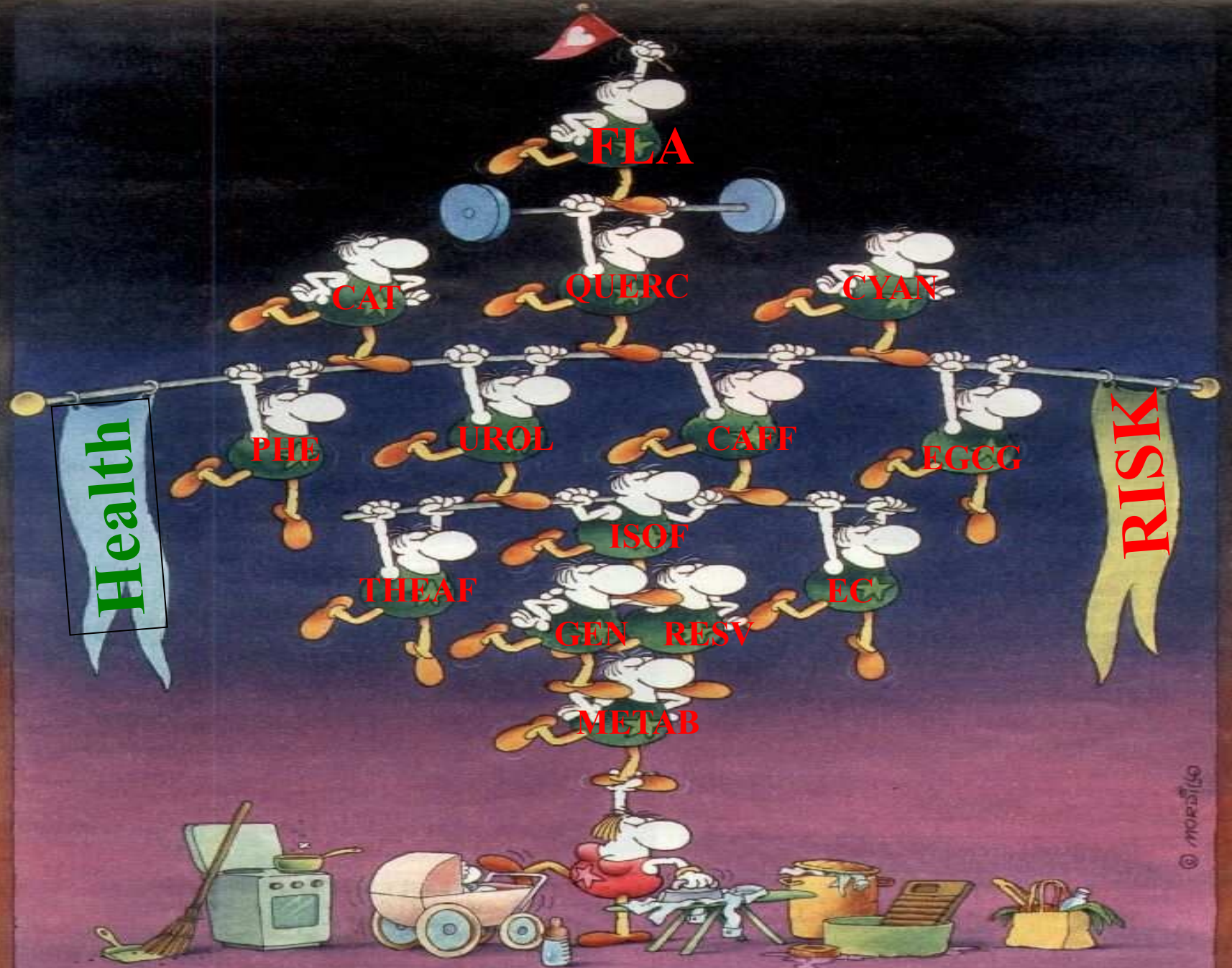
GOT CHOCOLATE ?

EFFECTIVENESS OF PLANT-DERIVED FOOD AND BEVERAGES ON PLASMA NON ENZYMATIC ANTIOXIDANT SYSTEM: *STUDIES SELECTION & RESULTS*



EFFECTIVENESS OF PLANT-DERIVED FOOD AND BEVERAGES ON PLASMA NON ENZIMATIC ANTIOXIDANT SYSTEM: *RESULTS*

TREATMENT	Health status (No. of participants)	No. of interventions	Results	Effect Size SMD [95% CI]	Test for Overall Effect P Value
Beverages (tea, fruit juices and red wine)	Healthy (n = 852)	23	↔	0.177 [-0.154 to 0.508]	.296
	Risk factors (n = 358)	12	↑	0.765 [0.310 to 1.220]	.001
Food (dark chocolate, fruit, vegetables and dietary pattern based on plant derived food)	Healthy (n = 650)	30	↑	0.502 [0.235 to 0.769]	<.001
	Risk factors (n = 168)	7	↑↑	1.253 [0.685 to 1.820]	<.001
Overall	Healthy (n = 1450)	53	↑	0.367 [0.162 to 0.572]	<.001
	Risk factors (n = 526)	19	↑↑↑	0.937 [0.592 to 1.281]	<.001



FLA

CAT

QUERC

CYAN

PHE

UROL

CAFF

EGCG

ISOF

THEAF

EC

GEN RESV

METAB

Health

RISK

© MORRIS

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The road to understanding is long and
tortuous...

