

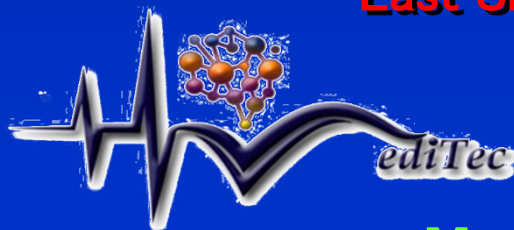
DO WE KNOW OUR FRIENDS AND FOES IN CARDIOVASCULAR DISEASE PREVENTION ?



Daniel Pella, M.D. Ph.D.
Professor of Medicine
12nd Cardiology Clinic



East Slovak Institute for Cardiovascular Disease
P J Safarik University
Košice, Slovakia



Co-funded by the
Erasmus+ Programme
of the European Union

MediTec, Kosice, Nov 21-24, 2018

ATHEROSCLEROSIS – LIPID HYPOTHESIS

- 19th century – Anitschkow – high cholesterol diet fed rabbits - development of atherosclerotic lesions
- epidemiological data showing clear relationship between LDL-cholesterol and atherosclerosis (Framingham, Seven Countries Study, Munster PROCAM, etc.)
- Brown and Goldstein – Nobel price in 1985 – lipid hypothesis of atherogenesis

ATHEROSCLEROSIS – ONLY LIPIDS ?

- Anitschkow – high cholesterol diet fed rabbits - have you ever seen rabbits eat meat or some food containing cholesterol ???
- atherosclerotic plaques – cholesterol content inside the plaques is approximately only 10-15%...
- there are many people (e.g. Greenland Eskimos) with elevated cholesterol, but they are not suffering from atherosclerosis...
- on the other hand there are many people with “normal” cholesterol already after acute myocardial infarction or stroke...

NON-ATHEROGENIC HYPERCHOLESTEROLEMIA

- subjects with documented hypercholesterolemia - increased total cholesterol (> 5.0 mmol/l) and LDL cholesterol (>3.0 mmol/l)
- very large particles of LDL-cholesterol – not able to penetrate into arterial wall
- these LDL particles are not prone to oxidation
- subjects with „such LDL profile“ are not suffering from cardiovascular diseases

ATHEROGENIC NORMOLIPIDEMIA

- subjects with lipid values within “normal range” - total cholesterol (<4.5 mmol/l) and LDL cholesterol (<1.80mmol/l)
- very small particles of LDL-cholesterol – rapidly penetrate into arterial wall (higher concentration of apolipoprotein B)
- these LDL particles are more prone to oxidation
- subjects with „such LDL profile“ are more frequently suffering from cardiovascular diseases

AIR POLLUTION – NOT ONLY RESPIRATORY BUT CARDIOVASCULAR DISEASE RISK AS WELL



LIGHT POLLUTION



Solution ? Pills....

HEAVY LIGHT AND AIR POLLUTION (CANCER, INFARCTION, STROKE, COPD)



NOISE POLLUTION – INCREASED STRESS



HARD WATER OR SOFT WATER ?

- “Experts“ recommend even to soften hard water – it is better for machines, no calcium stones



**FATRA - hard alkaline
water from Slovakia**

HARD WATER OR SOFT WATER ?

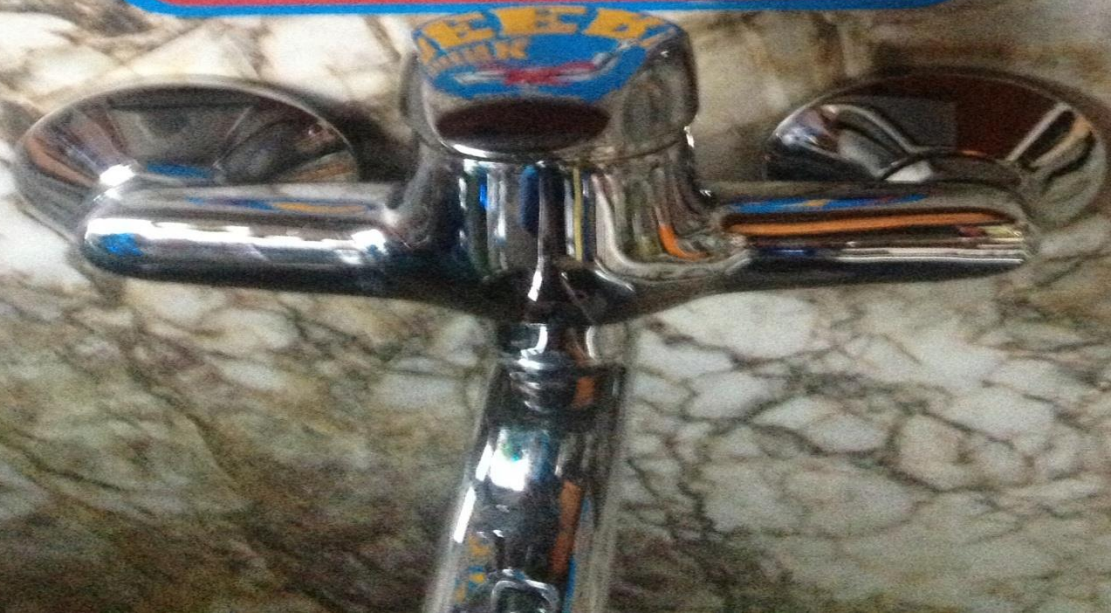
- “Experts“ recommend even to soften hard water – it is better for machines, no calcium stones

Is it true ?



Which water
is the best
one ???





HARD WATER OR SOFT WATER ?

- “Experts“ recommend even to soften hard water – it is better for machines, no calcium stones

Is it true ?

- soft water – bad taste, bad for human vessels
- concentration of calcium and magnesium is of the highest importance
- geographical regions with soft drinking water – higher prevalence of cardiovascular disease
- drinking of soft water may result in “hard vessels“

TABLE OF WATER HARDNESS

Hardness of water	German grades (N°)	Ca and Mg (mmol/l)
very soft	0-4.0	0.7
soft	4.01-8.0	0.71-1.42
medium hard	8.01-12.0	1.43-2.14
hard	12.01-18.0	2.15-3.2
very hard	18.01-30.0	3.21-5.4
extremely hard	> 30.01	> 5.41

**The most soft is distilled water –
disgusting taste**

VERY SOFT WATER – HIGH HEALTH RISKS

- increased incidence of cardiovascular diseases
- possible increased toxicity (frequently polluted with heavy metals)
- sometimes recommended “**by experts for detoxication**” – associated with life threatening hyponatremia, or other minerals deficit
- moreover, even good drinks could be distasteful (coffee, tea, beer) if based on soft water

TEA – GREEN OR BLACK, OR NO TEA ?

- “Experts“ recommend green tea, because it is healthier than black tea



TEA – GREEN OR BLACK, OR NO TEA ?

- “Experts“ recommend green tea, because it is healthier than black tea

Is it true ?



TEA – GREEN OR BLACK, OR NO TEA ?

- “Experts“ recommend green tea, because it is healthier than black tea. Some do not recommend drinking of tea due to content of caffeine

Is it true ?

- there exist several types of tea – white, green, oolong,black...
- green tea contains the highest concentration of antioxidants (but almost the same like black tea – difference only 0.9 mmol/l)
- black tea contains more broad spectrum of antioxidants like green one

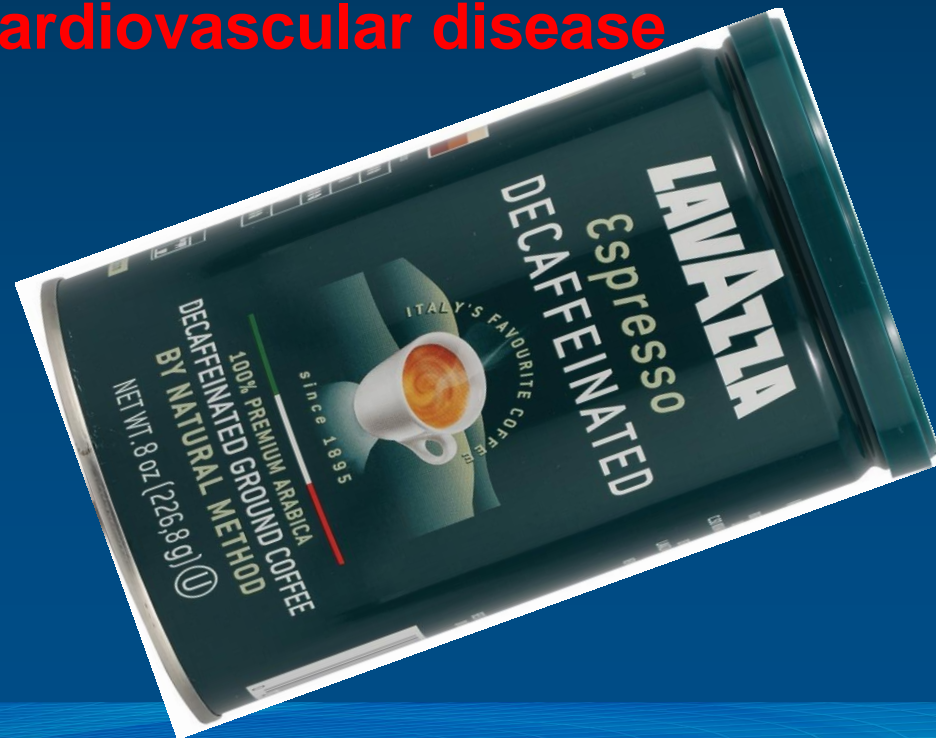
ANTIOXIDANTS IN TEA (WINE)

Antioxidants	green tea	black tea
catechins	30-42	1-3
teaflavins	-	2-6
simple polyphenols	2	3
other polyphenols	6	23
tanins	3	3
caffeine	3-6	3-6
total antioxidant activity	7.7 mmol/l	6.8 mmol/l

Total antioxidant activity of dry red wine is approx. 8.4 mmol/l

COFFEE – YES OR NO ? DECAFFEINATED ?

- “1000-times repeated lie becomes true.”
- Not only “experts“, but too many cardiologists and other doctors recommend to not drink coffee or to drink decaffeinated coffee for people with history of cardiovascular disease



COFFEE – YES OR NO ? DECAFFEINATED ?

- “1000 times repeated lie becomes true.”
- Not only “experts“, but too many cardiologists and other doctors recommend to not drink coffee or to drink decaffeinated coffee for people with history of cardiovascular disease

Is it true ?

COFFEE – YES OR NO ? DECAFFEINATED ?

- “1000 times repeated lie becomes true.”
- Not only “experts“, but too many cardiologists and other doctors recommend to not drink coffee or to drink decaffeinated coffee for people with history of cardiovascular disease

Is it true ?

- “typical coffee drinkers“ are smoking subjects (can be seen in coffee bars, etc.)
- Coffee drinking is frequently associated with unhealthy dietary and lifestyle habits

COFFEE – YES OR NO ? DECAFFEINATED ?

- coffee (up to 3-4 cups of espresso daily) has no effect on blood pressure, arrhythmias
- **positive vasodilatory effects on coronary circulation**



COFFEE – YES OR NO ? DECAFFEINATED ?

- Mediterranean diet - espresso coffee (very short contact of coffee with superheated steam – needed coffee machine with high pressure)
- Soluble coffee is something strange (like e.g for Italians “ketchup on pizza“ (they will never do so))
- Coffee with caffeine is strong antioxidant

COCOA AND CHOCOLATE

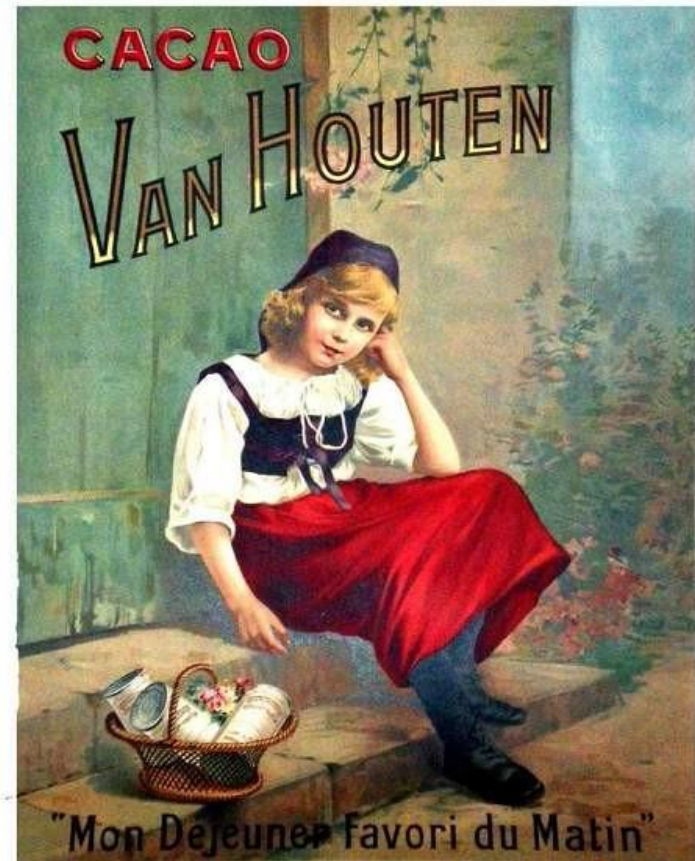
- “Experts“ evaluated their effects in general and negatively – increased risk of diabetes and dyslipidemia



COCOA AND CHOCOLATE

- “Experts“ evaluated their effects in general and negatively – increased risk of diabetes and dyslipidemia

Is it true ?



COCOA AND CHOCOLATE

- “Experts“ evaluated their effects in general negatively – increased risk of diabetes and dyslipidemia

Is it true ?

- Carl von Linné (1773) Theobromma cacao (theobromma – “food for Gods“)
- Panama Indians drinking a lot of cocoa (5-6 cups daily) sweetened with bananas (9-times less CV disease, 17-times less cancer disease like other Panama citizens)

COCOA AND CHOCOLATE

- Van Houten in 1882 – developed hydraulic mangle – decreased content of cocoa butter from 57% to 27% and later on there was no cocoa butter in chocolate !!!
- today – many “chocolates“ are sold and containing no cocoa
- white chocolate - no chocolate
- “chocolates“ frequently contain a lot of margarines – they are proofed against high temperatures, have good sensoric properties, looks like real chocolate and tastes like real chocolate

COCOA AND CHOCOLATE

- chocolates based on margarines containing small amount of cocoa butter (or none) are associated with higher risk of diabetes type 2
- cocoa butter (or cocoa) is rich in antioxidants, minerals and vitamin D
- healthy chocolate may prevent myocardial infarction and stroke (antiinflammatory effects, effects againts insulin resistance and diabetes type 2, antithrombotic properties)
- healthy chocolate – must contain at least 70 % of cocoa

Obesity “guarantee“ bad health, not only development of atherosclerosis

Diseases associated with obesity:

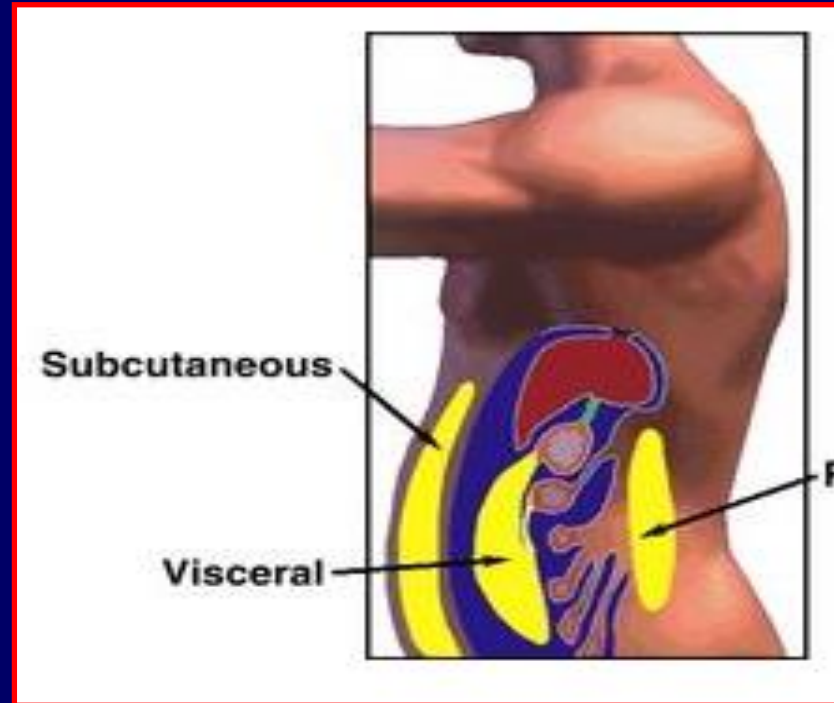
- Hypertension
- Diabetes mellitus type 2
- Dyslipidaemia
- Cardiovascular disease
- Gall-bladder and pancreatic diseases
- Osteoarthritis and osteoarthrosis
- Stroke
- Respiratory diseases (Pickwick sy.)
- **Cancer (uterus, breast, colon, prosthatic gland)**

“During evolution was important: eat as much as possible in order to increase chance for survival. Today, many people are dying due to morbid obesity.”

– Dr. Bruce Spiegelman,
Harvard Medical School



Metabolic syndrome



hypertriglyceridaemic waist

**LIPOSUCTION ? MAY RESOLVE
THE PROBLEM ?**

LIPOSUCTION ? MAY RESOLVE THE PROBLEM ?

YES, but....

LIPOSUCTION ? MAY RESOLVE THE PROBLEM ?

YES, but....

only in association with change of lifestyle

LIPOSUCTION ? MAY RESOLVE THE PROBLEM ?

YES, but....

only in association with change of lifestyle

otherwise, visceral fat will be increased

DIABETES MELLITUS AND CARDIOVASCULAR RISK

- Hyperglycaemia ???
- Dyslipidemia ???
- Hypertension ???

*Which parameter is the most important
for CV disease prevention ?*

DIABETES MELLITUS AND CARDIOVASCULAR RISK

- hyperglycaemia (3)
- dyslipidemia (1)
- hypertension (2)

Uncontrolled dyslipidemia is responsible for majority of cardiovascular events not hypertension, not blood glucose control

CONCLUSIONS I.

- **perform physical activity at least 4-5 times weekly**
- **drink hard water, do not avoid coffee, black or green tea and chocolate (alcohol – “drink responsibly“ – preferably red wine)**
- **avoid food containing margarines (high amount of unhealthy n-6 PUFA, trans-fatty acids)**
- **do not smoke, prevent obesity and diabetes**
- **eat a lot of vegetables, fruits and food containing n-3 PUFA**

CONCLUSIONS II.

- **treatment of dyslipidemia remained the basic pillar in preventive cardiology**
(both pharmacological and non-pharmacological !!!)
- **novel diagnostic markers are needed**
(size of LDL particles, apoB, hs CRP, etc.)
- **healthy lifestyle**
(if possible, daily exercise and eating of recognized healthy foods)

THANK YOU !