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ROLE OF FATS IN PROMOTING HEALTH

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CONTENT

1. Why fat is so important
2. Recommendation for dietary fat intake
3. Type of fats
4. Fat use -industry



FAT IS A KEY COMPONENT IN A HEALTHY DIET



- Provides energy
- Contains the essential fatty acids (omega-3 and 6)
- Is a carrier of fat soluble vitamins
- Contributes to feelings of satiety
- Adds taste and flavour to our foods



BUT it is important to choose the right type of Fat

DIETARY RECOMMENDATIONS SHIFTED FROM LOW-FAT TO FAT QUALITY



World Health Organization
Geneva 2003

1980
"Low-Fat" diets
(quantity)

2000
Shift from "low" to
moderate fat and
low SAFA

2003
The qualitative
composition
of fats important

AIM FOR FITNESS...

- ▲ Aim for a healthy weight.
- ▲ Be physically active each day.

BUILD A HEALTHY BASE...

- Let the Pyramid guide your food choices.
- Choose a variety of grains daily, especially whole grains.
- Choose a variety of fruits and vegetables daily.
- Keep food safe to eat.

CHOOSE SENSIBLY...

- Choose a diet that is low in saturated fat and cholesterol and moderate in total fat.
- Choose beverages and foods to moderate your intake of sugars.
- Choose and prepare foods with less salt.
- If you drink alcoholic beverages, do so in moderation.

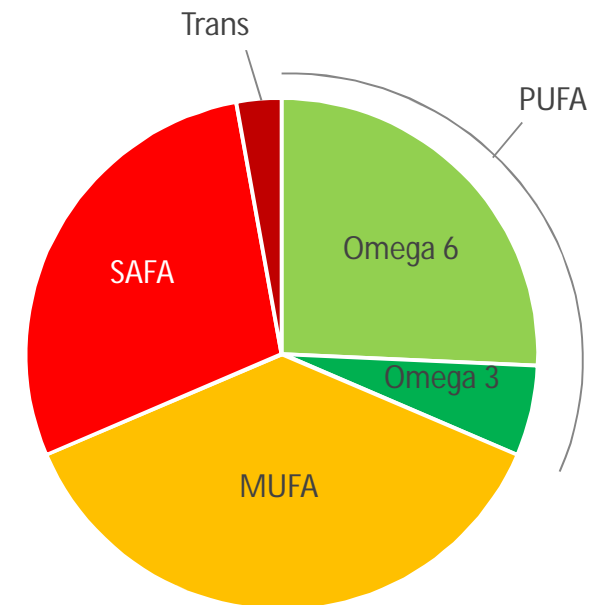
Ranges of population nutrient intake goals

Dietary factor	Goal (% of total energy, unless otherwise stated)
Total fat	15-30%
Saturated fatty acids	<10%
Polyunsaturated fatty acids (PUFAs)	6-10%
n-6 Polyunsaturated fatty acids (PUFAs)	5-8%
n-3 Polyunsaturated fatty acids (PUFAs)	1-2%
Trans fatty acids	<1%
Monounsaturated fatty acids (MUFAs)	By difference ^a

INTERNATIONAL GUIDELINES ON DIETARY FATS



Dietary Factor	Recommended amount (% Energy)
Total Fat	20-35%
Saturated Fatty Acids	<10%
Poly Unsaturated Fatty Acids (PUFA's)	6-11%
n-3 PUFAs	0,5-2%
n-6 PUFAs	2,5-9%
Trans Fatty Acids	<1%
Mono Unsaturated Fatty Acids	By difference



WHO/FAO "Diet, Nutrition, and the prevention of chronic diseases". 2008.

MAJOR TYPES OF DIETARY FAT

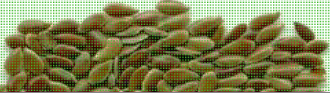


Favourable fats

PUFA

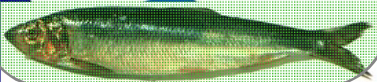
Polyunsaturated
fatty acids

Omega-3



- ALA
 α -Linolenic acid

- EPA and DHA
Eicosapentaenoic acid
Docosahexaenoic acid



MUFA

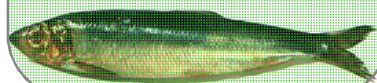
Monounsaturated
fatty acids

Omega-6



- LA
Linoleic acid

- AA
Arachidonic acid



Unfavourable fats

TFA

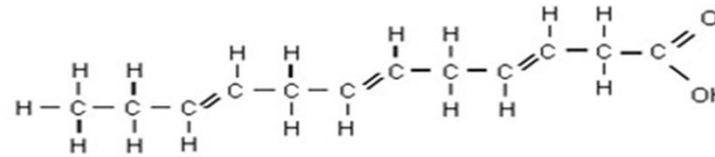
trans
fatty acids

SFA

Saturated
fatty acids



POLY UNSATURATED FATTY ACIDS



Polyunsaturated Fat



- Two or more points of unsaturation
- include both Omega 3 & Omega 6 fatty acids
- Substituted for products high in SAFAs (not increasing caloric intake) foods with Omega 6 and Omega 3 can help maintain heart health and help the body digest important nutrients

LINOLEIC ACID & ALPHA-LINOLENIC ACID

- **Linoleic acid** and **alpha-linolenic acid** cannot be produced by the body
- Need to be taken in from diet- Essential fats
- Linoleic acid (omega-6) and alpha-linolenic acid (omega-3) are needed for growth and development and for maintaining health
- Metabolites of linoleic acid and alpha-linolenic acid are involved in the control of various metabolic processes

SATURATED FATTY ACIDS



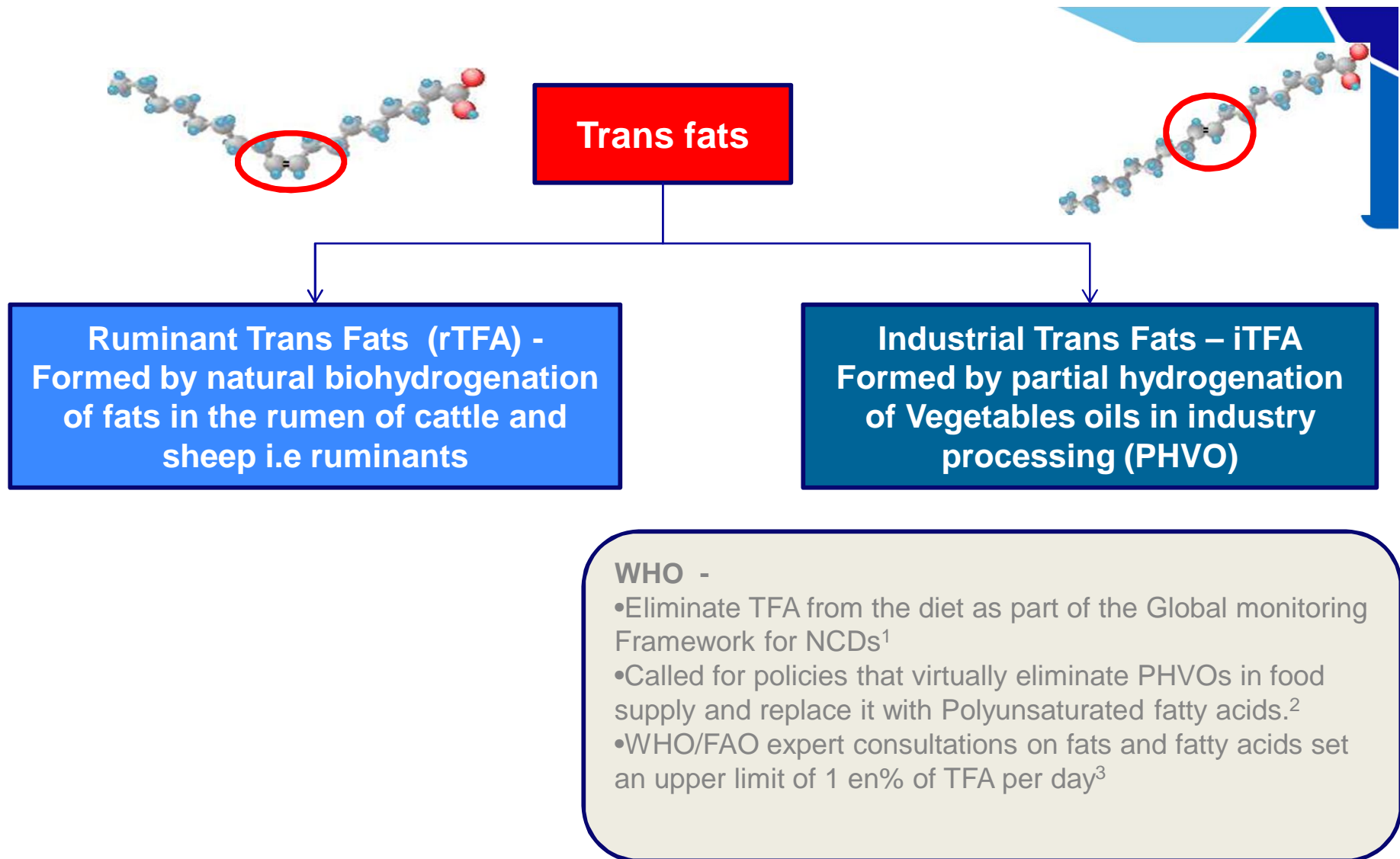
- A fatty acid carrying the maximum possible number of hydrogen atoms (having no points of unsaturation).
- "less desirable" fats
- Solid or nearly solid at room temperature, they are used in many processed foods. All animal fats (meat, poultry and dairy) contain some saturated fat
- They encourage the body to produce more cholesterol, increasing the risk of heart disease.

TRANS FATS



University of Illinois

- Results from the partial hydrogenation of polyunsaturated oils
- "less desirable" fats
- While some trans fats are found naturally in meat and dairy products, most are created through a manufacturing process that turns fat from liquid into solid fat.
 - The solids — used to keep manufactured foods fresh
- have been linked to elevated LDL or "bad" blood cholesterol levels and increased risk of heart disease.



1. World Health Organization. Global strategy on Diet, Physical Activity and Health . 1-5-2004
2. World Health Organization. A draft comprehensive global monitoring framework, including indicators, and a set of voluntary global targets for prevention and control of noncommunicable diseases.34-52. 31-10-2012. Geneva, World Health Organization
3. Food and Agricultural organization and World Health Organization. Fats and fatty acids in Human Nutrition, Report of an expert consultation 91.2010

TWO TYPES OF BLOOD CHOLESTEROL

LDL-cholesterol

Types of cholesterol



- Accumulates in the blood vessels
- Established risk marker for CHD
- LDL-cholesterol target for CHD treatment

HDL-cholesterol



- Removes cholesterol from blood
- Inversely related to CHD
- Total/HDL-cholesterol ratio: strongest risk predictor of CHD

10% decrease
in **LDL-c** reduces
CHD risk by
7%

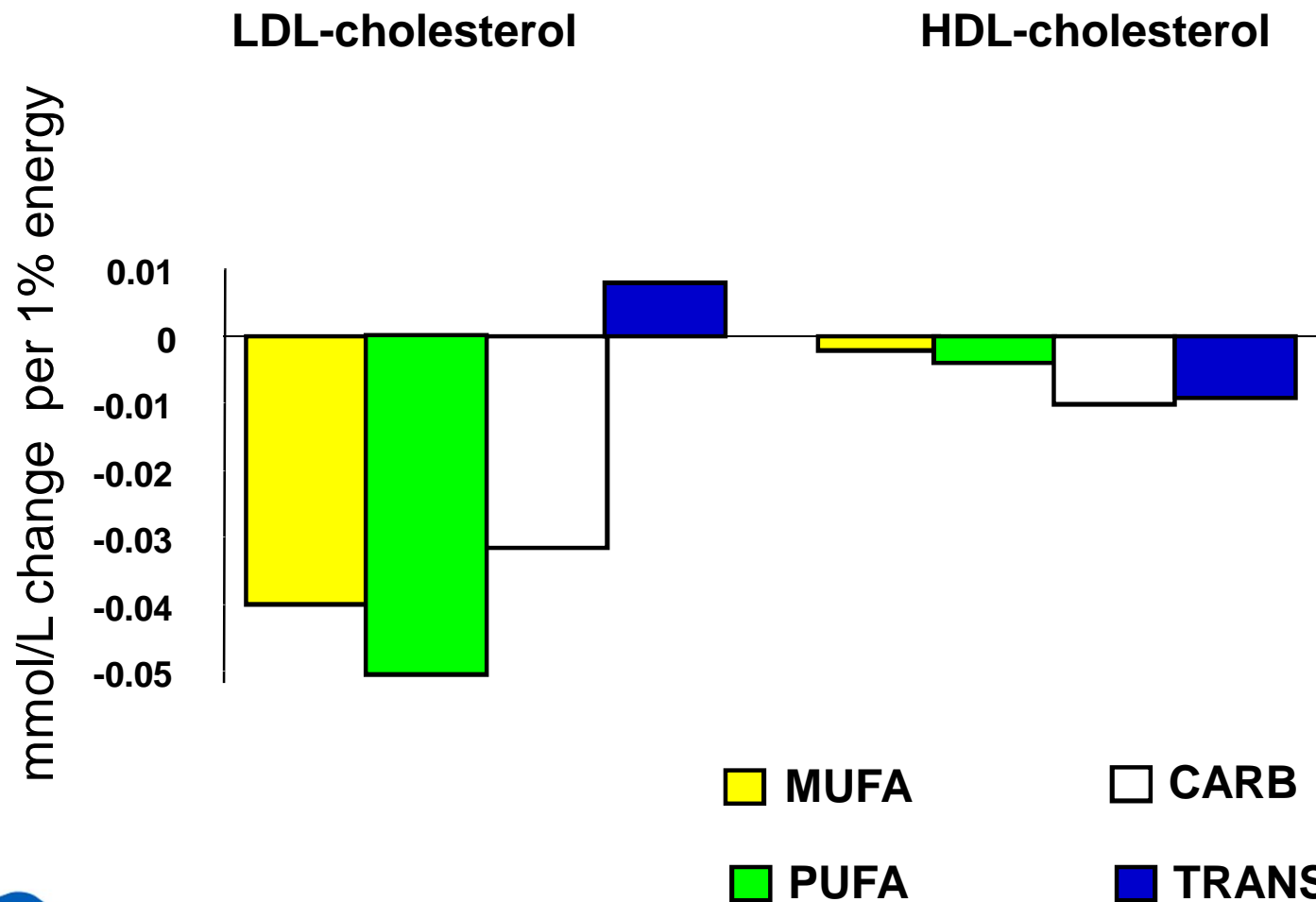
1% decrease
in **total/HDL-c
ratio** reduces CHD
risk by 2-3%

1% increase
in **HDL-c** reduces
CHD risk by 1-3%

REPLACING SATURATED FATTY ACIDS BY PUFA, MUFA OR CARBS LOWERS LDL-CHOLESTEROL



Meta-analysis of 60 controlled feeding trials (2003) is STILL VALID

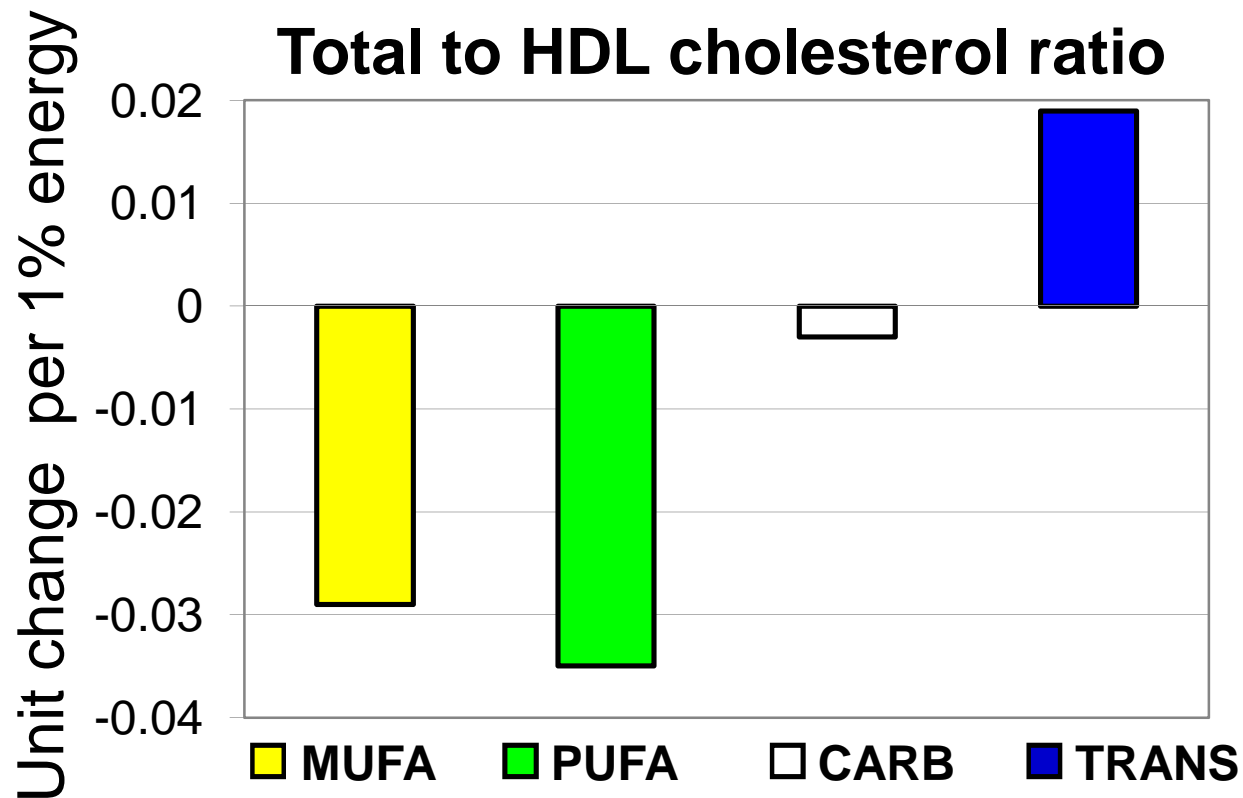


Mensink, Zock, Kester, Katan. Am J Clin Nutr 2003

REPLACING SATURATED FATTY ACIDS BY PUFA OR MUFA (NOT CARBS) LOWERS TOTAL/HDL CHOLESTEROL

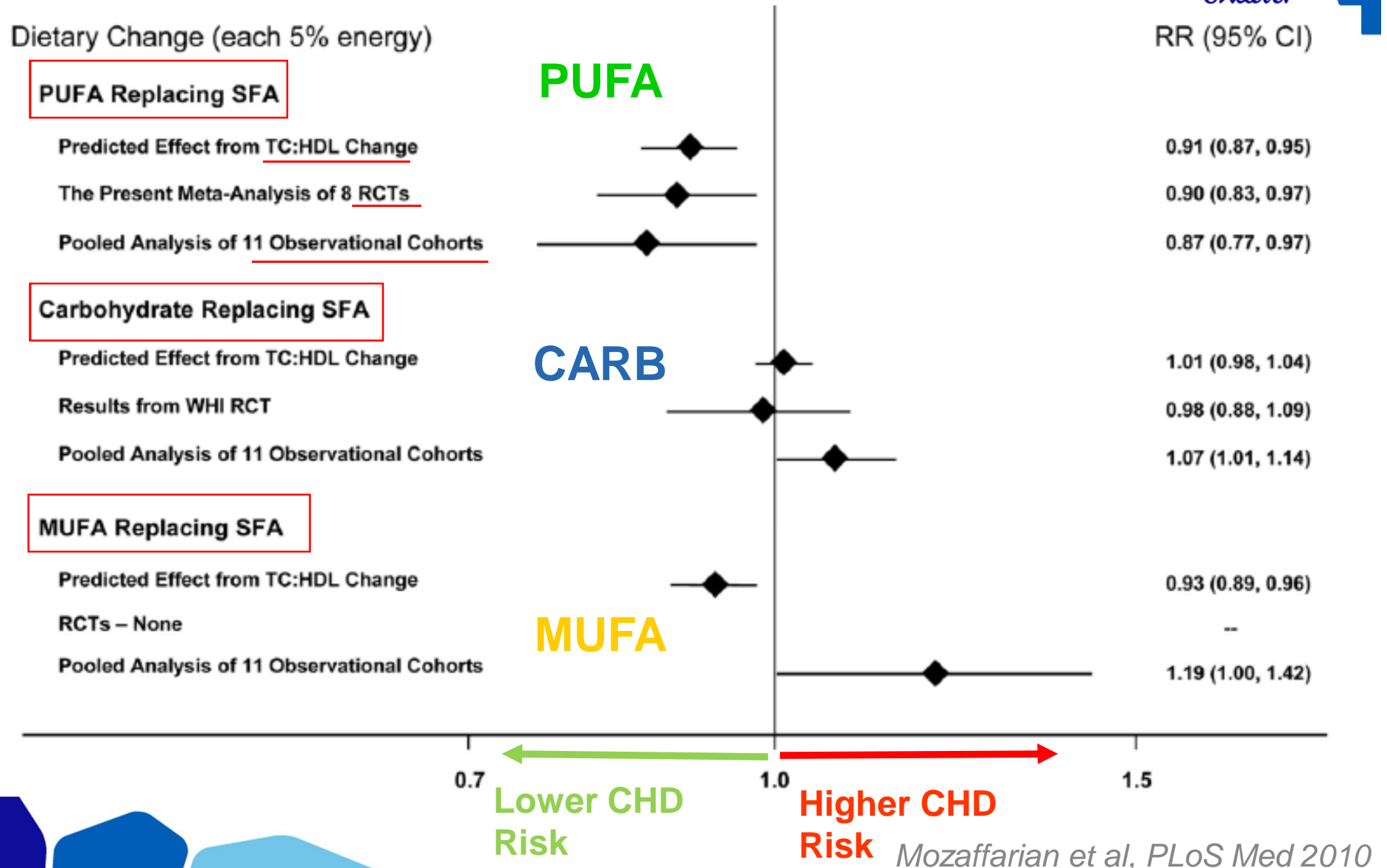


Meta-analysis of 60 controlled feeding trials



Mensink, Zock, Kester, Katan. Am J Clin Nutr 200

REPLACING SFA: SUMMARY OF EVIDENCE FROM DIFFERENT TYPES OF STUDIES



NUTRITION TARGETS



Better products



Double the proportion of portfolio meeting Highest Nutritional Standards by 2020



75% of Foods to meet 5g salt/d criteria by 2020



Saturated fat \leq 33%* in 90% soft veg oil margarines by 2017



Trans fat from PHVO removed from all products by 2012



Reducing sugar by 25% in Ready to Drink Tea by 2020



All children's ice creams \leq 110kcal/portion by 2014

Better Diets/Lives



Improving heart health awareness through Heart Age Tool by 2020



Providing healthy eating information on all our products by 2015



Improving employee health and nutrition by 2020

*38% SAFA for tropical countries

APPROACH OF INDUSTRY TO MANAGE FAT IN PRODUCTS



Moving to low fat products

- Margarine (80%) fat ; Fat spread (<80%)
- Fat replacers – eg Olestra, maltodetrien
- Spray oils – for cooking



1kcal/0.1g fat per spray
5 sprays

Low fat versions

- Skimmed milk and use skimmed milk as ingredient
- Low fat products eg: Low fat ice-cream, Low fat youghurt

Pre-frying treatments – Oil blanching, vaccum frying

Use baking instead of frying

FAT MANAGEMENT IN INDUSTRY



Elimination of Industrial Trans fats

Hydrogenation

- ❖ Process which converts liquid oils into solid fats.
- ❖ During this process, unsaturated fatty acids are converted into saturated fatty acids.
- ❖ These saturated fatty acids are no different to naturally occurring saturated fatty acids.

Partial hydrogenation

- ❖ Only few of the unsaturated fatty acids are converted to Saturated fatty acids and in the process trans fatty acids gets formed.



MARGARINE MAKING PROCESS



- After harvesting, the seeds are pressed and the oil is extracted and filtered (to lose the prominent smell). The resulting oils are identical to the table oils that are sold in supermarkets as sunflower seed oil, rapeseed oil/canola oil, soy oil, etc.

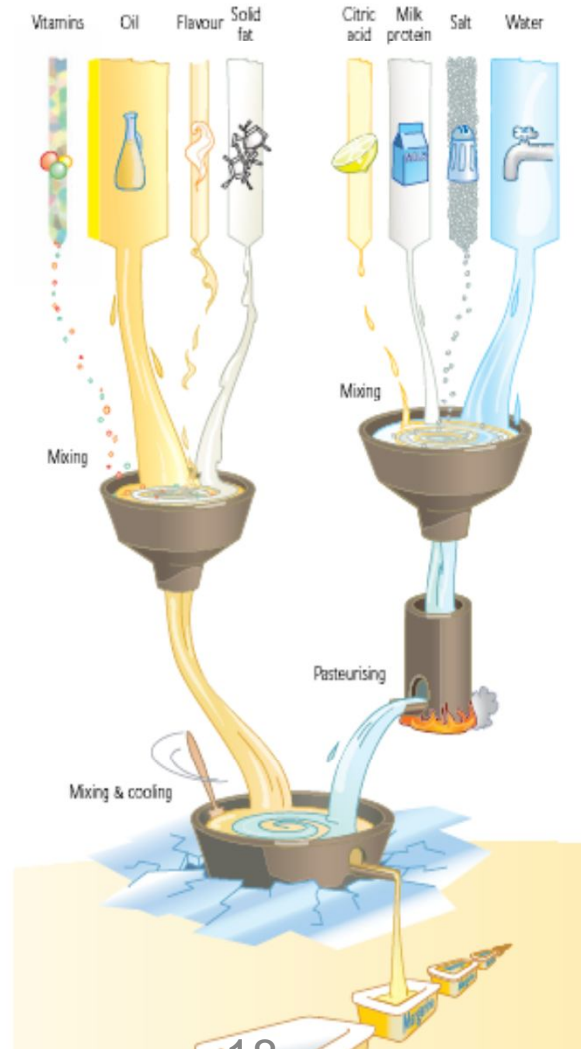
- Most margarines contain a blend of vegetable oils to get a balanced composition.



- The solid fat is melted and mixed with the liquid vegetable oils.

- This is carefully blended with the milk mixture and then gradually chilled

- Finally the margarine is packed, stored refrigerated to keep the high quality and delivered to your local store.



APPROACH OF INDUSTRY TO MANAGE FAT IN PRODUCTS

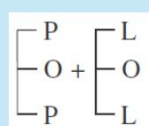


Elimination of Industrial Trans fats

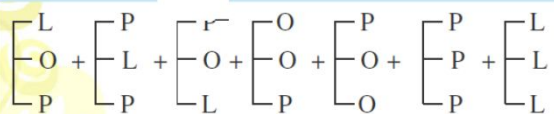
Modifying oil

Fat re-arrangement (inter esterification)

Randomisation of all fatty acid chains over all triglyceride molecules in the oil

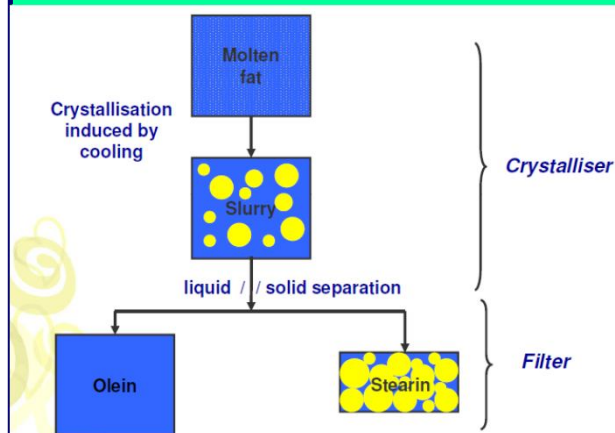


Interchanging the FA within & between the triglyceride molecules



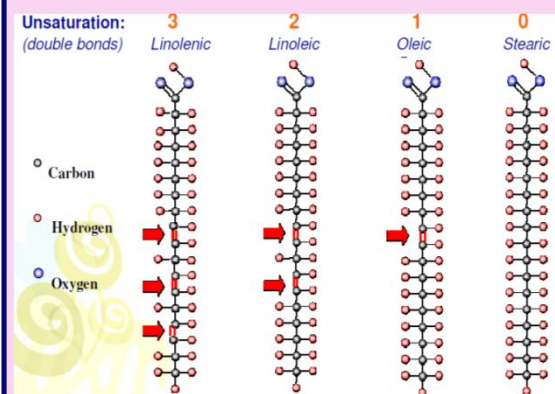
Fractionation

Crystallization and separation of solid, high-melting triglycerides from liquid, low-melting triglycerides



Full hydrogenation

Saturation of double bonds with hydrogen,



CONSUMER COMMUNICATION – INCREASE AWARENESS



- Transparent Nutrition details on pack
Declare – Energy, Protein, Carbohydrates, Sugars, Fibre, Total Fat, Saturated fat, Trans fat, Sodium
- Increase the awareness on Heart Health

Enabling consumer an informed healthier choice

Nutritional Information Typical Value			
Serving size: 20g			
Servings per container: 05			
	Per 100g	Per serving	% GDA [†] /per serve
Energy (kJ/kcal)	612/2560	112/456	6.12
Protein (g)	0.4	0.1	
Carbohydrates (g)	1.0	0.2	
As Sugars (g)	0.0	0.0	0
Fat (g)	68.0	13.6	19.4
Saturated (g)	44.2	8.8	44.2
Monounsaturated (g)	18.3	3.7	
Polyunsaturated (g)	4.9	1.0	
Trans fat (g)	0.7	0.1	
Vitamin A (µg)	1000	200 (33% of RDA)	
Vitamin D (µg)	8.25	1.65 (33% of RDA)	
Sodium (mg)	700	140	5.8

RDA = Recommended Dietary Allowances,
Food (Labelling and Advertising) Regulations

[†] Based on guideline daily amount of an adults diet of 2000kcal

SUMMARY



- Fat is a key component in healthy diet
- It is important to choose the right type of fat
- Dietary recommendation shifted from quantity to fat quality
- Replacing saturated fats by PUFA and MUFA has positive effect on cholesterol
- Food industry continuously improving in managing fat content of their products to use fat in health promotion

THANK YOU



NUTRITION

HELPING PEOPLE MAKE HEALTHY CHOICES