

FLAX CANADA 2015

FORGING A NEW PATH IN HEALTH AND WELLNESS



HISTORY

- Alberta/Saskatchewan/Manitoba commit funds - 1st quarter 2004
- Initial funding from Ag. Canada of \$830,000 - June 2004
- FC2015 Inc. incorporated as wholly owned subsidiary of Flax Council of Canada - July 2006
 - Separate board, strategy, budget
- Ag. Canada commits \$4.0M through to March 31, 2008



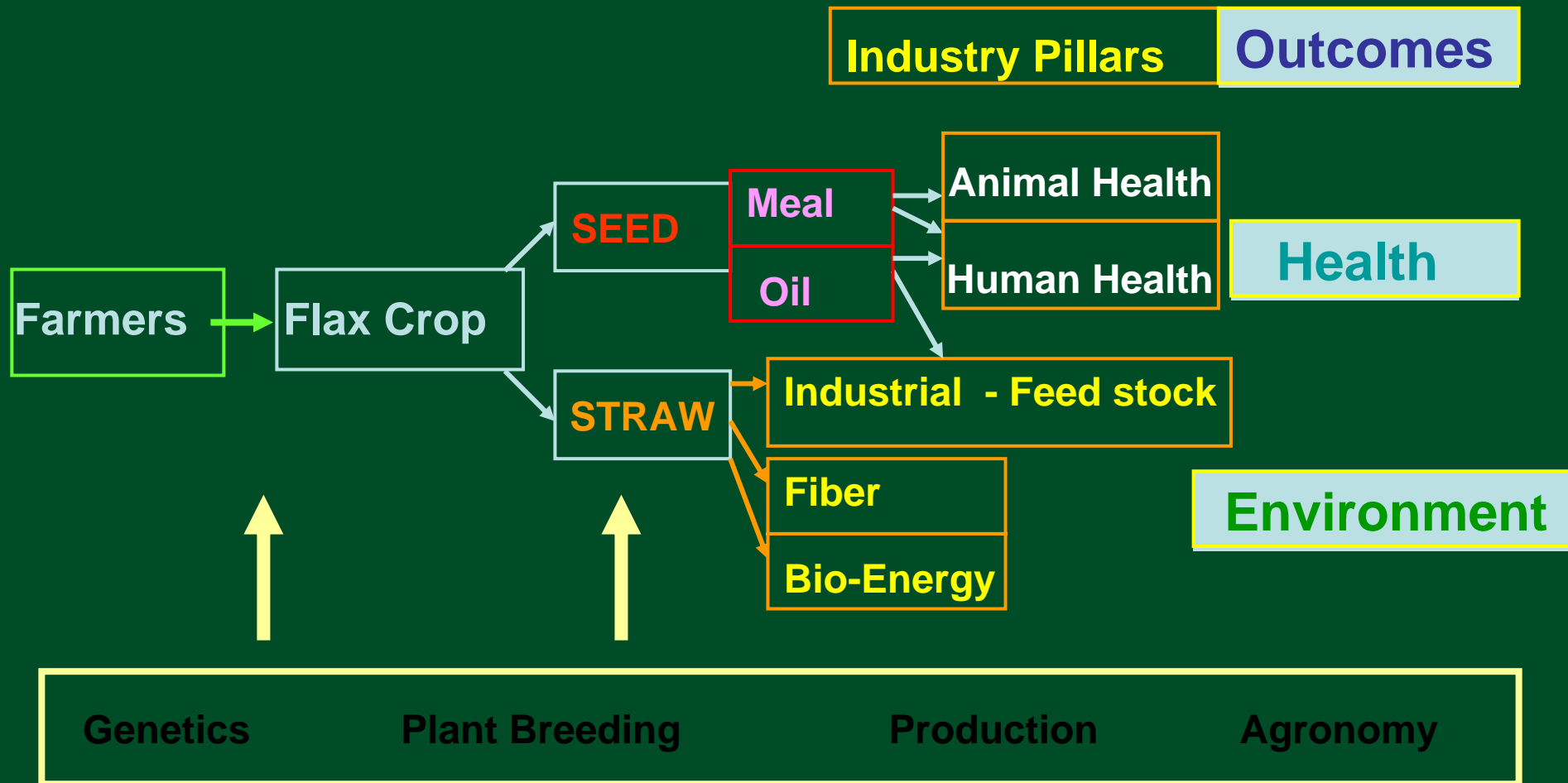
FC 2015

- **Four vertical pillars rooted in horizontal foundation pillar – plant breeding, management, agronomics**
 - **Human health**
 - **Animal health and nutrition**
 - **Industrial feedstocks**
 - **Bio-fibres**



Flax - Canada's Bio-Economy Crop

Total Flax Crop Utilization



AGRICULTURE AND HEALTH

- *"Wellness will be for the next fifteen years... what convenience was for the last fifteen"*

Brock Leach, chief innovations officer, PepsiCo

- *"It is imperative that the food industry continues to respond with efficacious products that have credible benefits, and sophisticated 'natural' solutions that taste good."*

Ted Ziemann, President, Cargill Health & Food Technologies

- *"We, Canadians will pay the health bill, \$1.4 Trillion over the next 10 years. It means that 7 out of 10 provinces in Canada will essentially reallocate public dollar expenditures to health care delivery only... Agriculture can be a fundamental pillar for a healthy Canada."*

Gaetan Lussier, Chair, Canadian Agri-Food Policy Research Institute

Why FLAXSEED ??

- Major oilseed crop
- The richest source of omega 3 alpha linolenic acid - ALA
- Rich in dietary fiber
 - Soluble, Insoluble
- Rich source of lignans (phytoestrogens) and other antioxidants
- Excellent plant protein

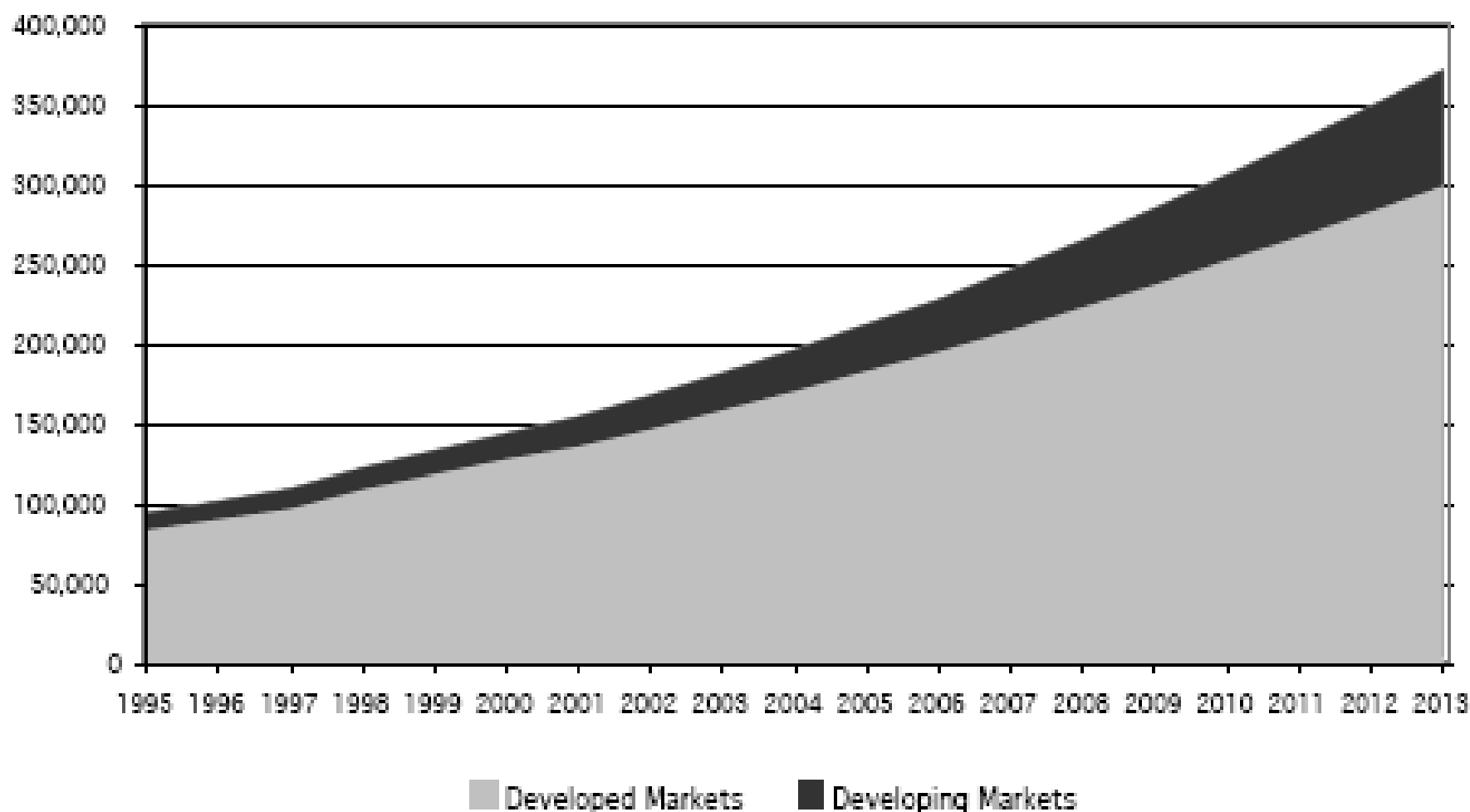


Solid credible research portfolio

Health Benefits of Flaxseed Components

	Omega-3	Lignans	Soluble Fiber	Other Phytonutrients
Cardiovascular Health	•	•	•	•
Diabetes	•	•	•	•
Renal Disease	•	•		
Immune System	•	•		•
Anti-Oxidant		•		•
Anti-Cancer	•	•	•	•
Bone Health	•	•		
Women's Health	•	•		•
Prostate Health		•		
Glycemic Index		•	•	

The Global Nutrition Industry (\$mil), 1995-2013



Source: Nutrition Business Journal derived from a variety of sources. Units in \$ million in consumer sales of dietary supplements, functional foods, natural & organic foods and natural & organic personal care and household products. Developed markets include USA, Canada, Western Europe, Japan and Australia/NZ. Share of developing markets increases from 10% to 20% from 1995-2013.

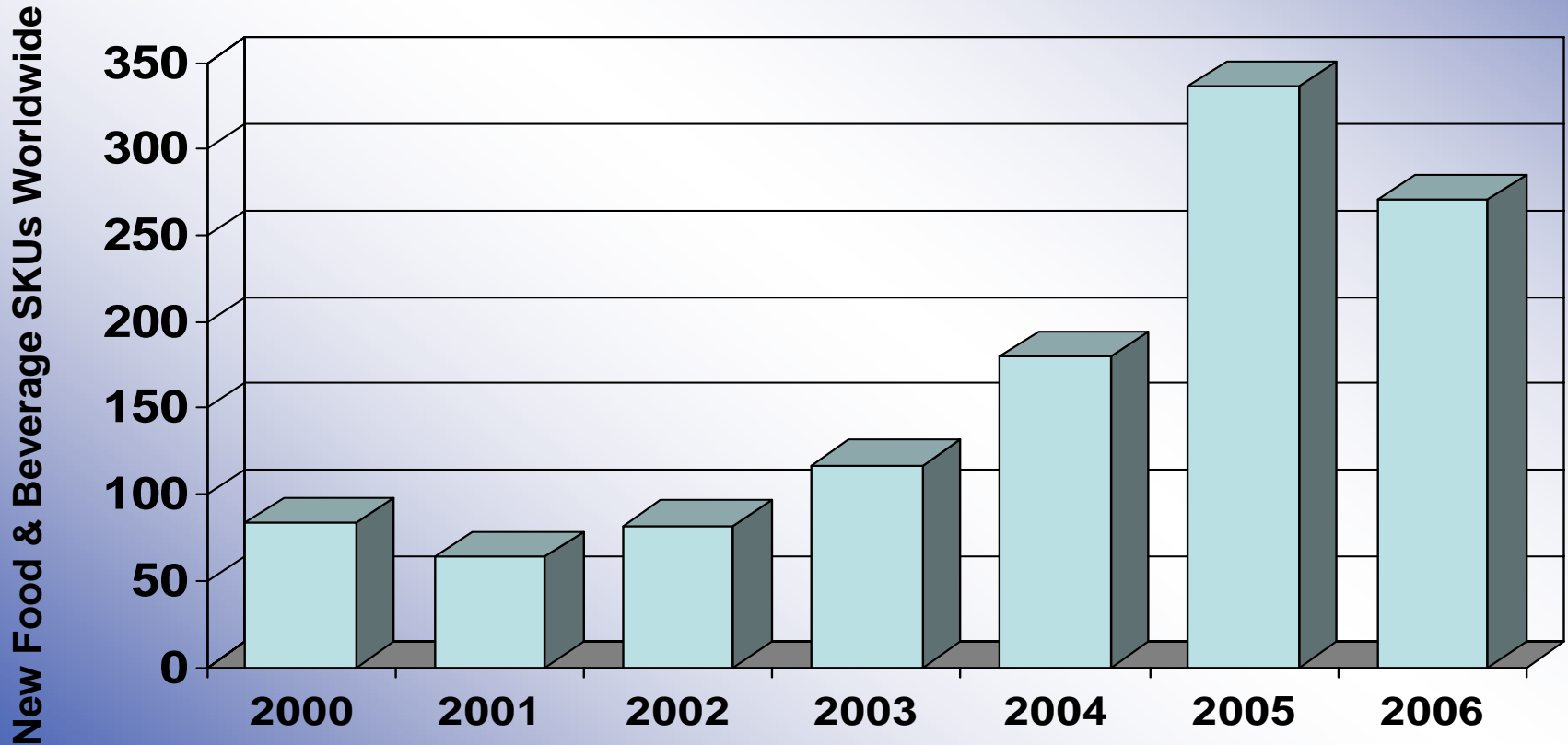
The 2006 Global Nutrition Industry (\$mil)

Segment	USA	Global	% in USA
Supplements	22,460	68,270	33%
Natural & Organic Food	23,600	53,780	44%
N&O Personal Care/HH*	7,490	21,270	35%
Functional Food	31,400	85,010	37%
Total Nutrition Industry	84,950	228,330	37%

*Source: Nutrition Business Journal derived from a variety of sources. Units in \$ million in consumer sales. *Natural & Organic Personal Care and Household Products*

Flax - New Product Launches

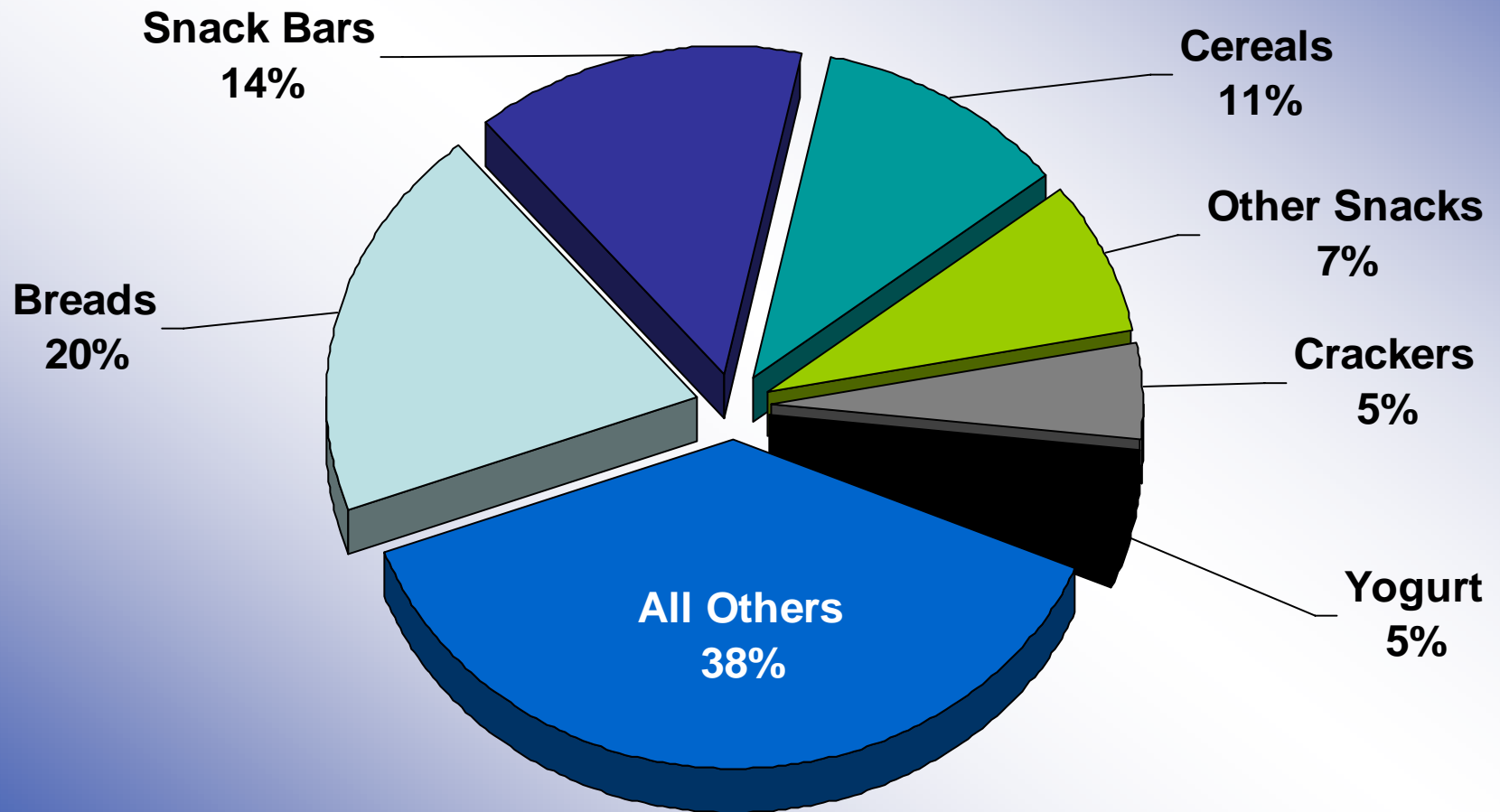
Launches have nearly tripled since 2003



Source: Datamonitor's Productscan Online

New Product Examples

Top categories for new Flax introductions: 2006



Source: Datamonitor's Productscan Online, category launches by SKU



Daily Values (DV) and Nutrient Content Claims - ALA

May 16, 2004 U.S. FDA

Daily Value

- **Minimum recommended DV = 1,300 mg per day**
- **No upper-limit established for ALA consumption**

Nutrient Content Claim	Amount of ALA Omega-3 (per serving)
"high", "rich" or "excellent" source of ALA omega-3	260 mg
"good" source of ALA omega-3	130 mg
"more" ALA omega-3 (than reference food)	130 mg

Structure/Function Claims

S/F claims for food products describe the effect that a food product has on the normal structure or function of the body.

These need not be pre-approved by the FDA, but they must be true and not misleading to the consumer.

Products containing flax qualify for S/F Claims.

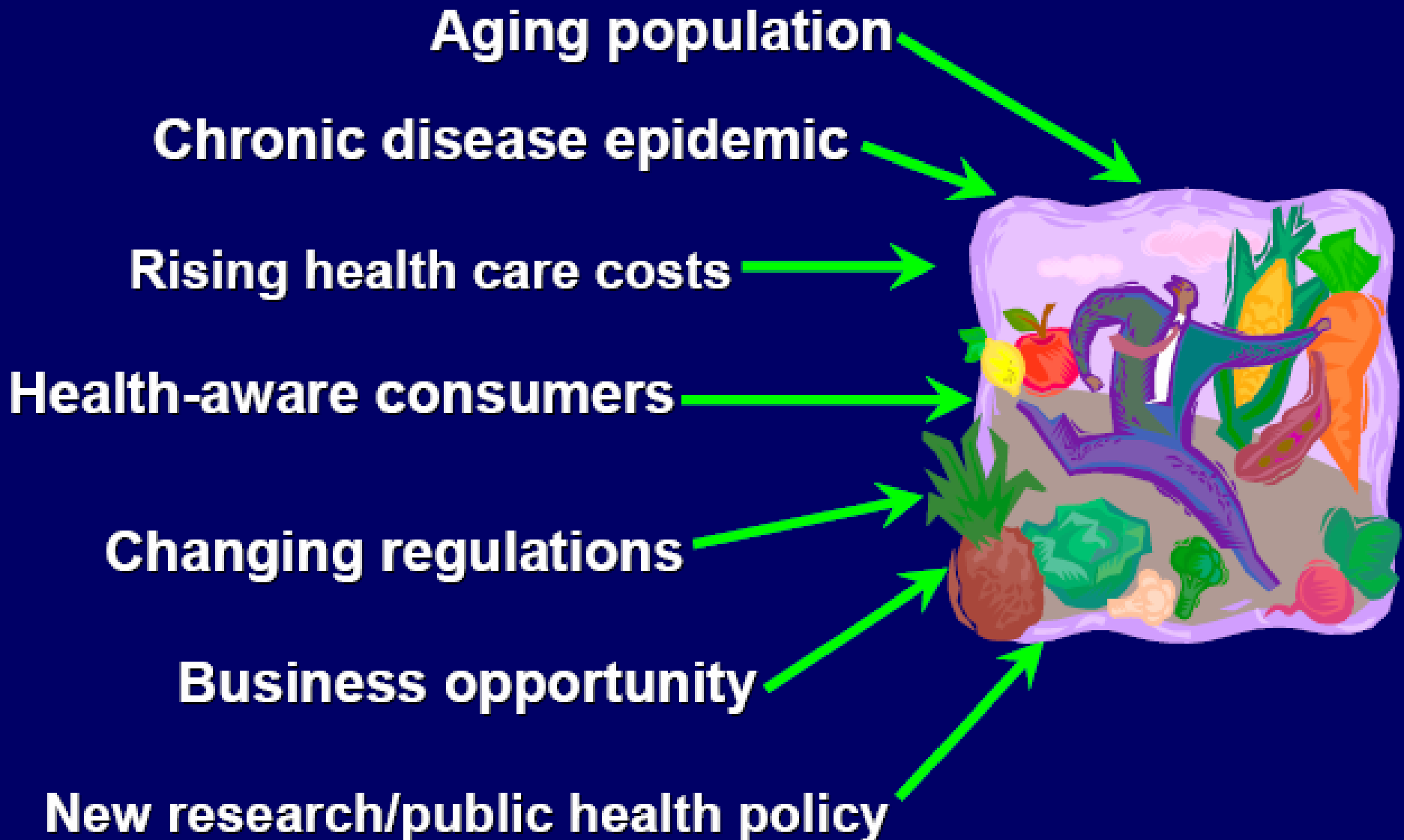
“Now with Omega-3 ALA To Help Support A Healthy Heart!”



*Now with Omega-3
ALA To help
Support a Healthy
Heart*

*Good source of
Omega-3 ALA - now
with 130mg per
serving which is 10%
of the daily value for
ALA (1.3g)*

Health & Nutrition Drivers





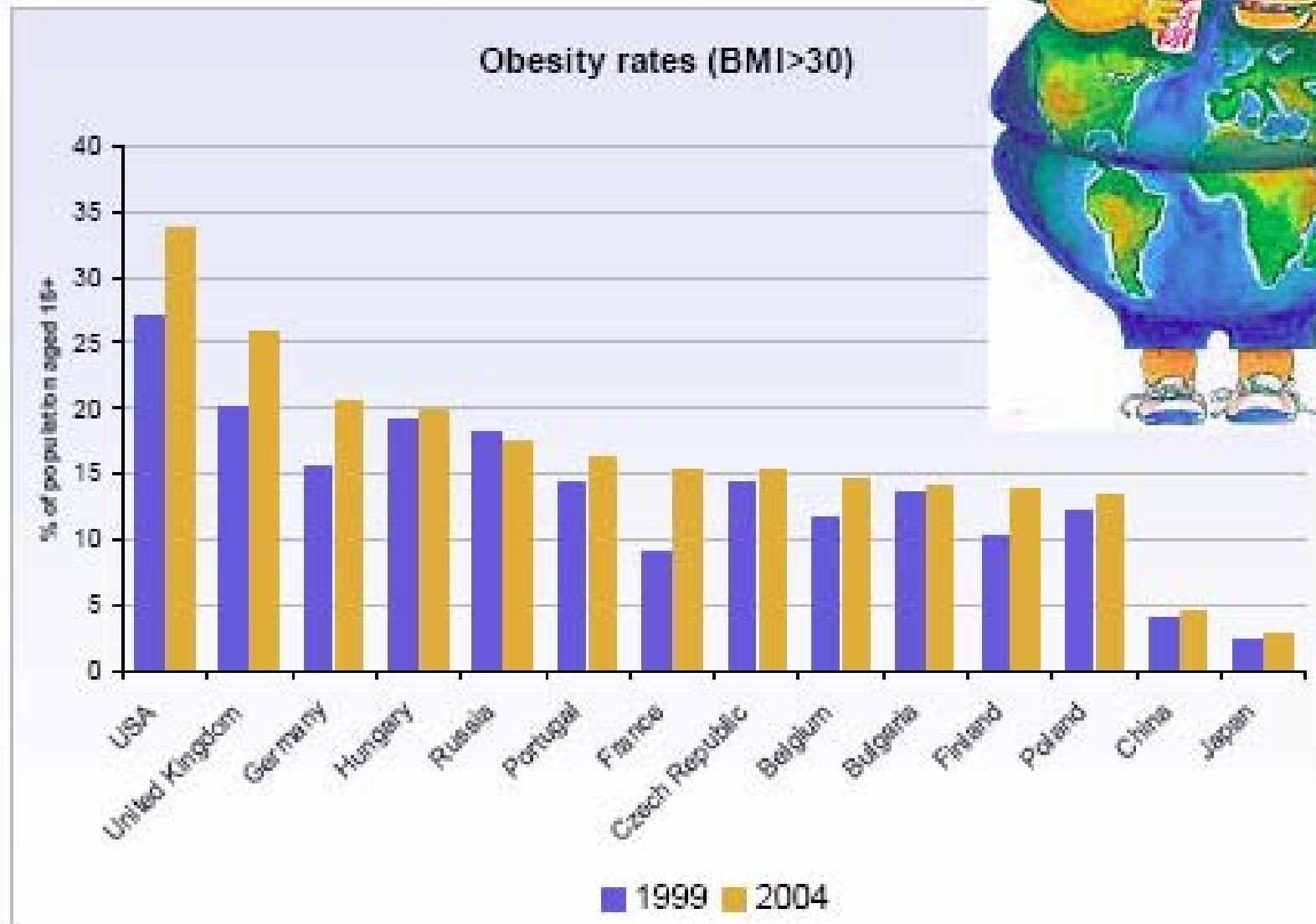
WORLD HEALTH ORGANIZATION

GLOBAL STRATEGY ON DIET, PHYSICAL ACTIVITY AND HEALTH

- **Chronic diseases are now the major cause of death and disability worldwide**
 - ✓ 59% of the 56.5 million deaths annually
 - ✓ 46% of the global burden of disease
- **Relatively few risk factors cause the majority of the chronic disease burden**
 - ✓ cardiovascular disease
 - ✓ cancer
 - ✓ diabetes
 - ✓ respiratory diseases
 - ✓ obesity



The Global Obesity Epidemic...

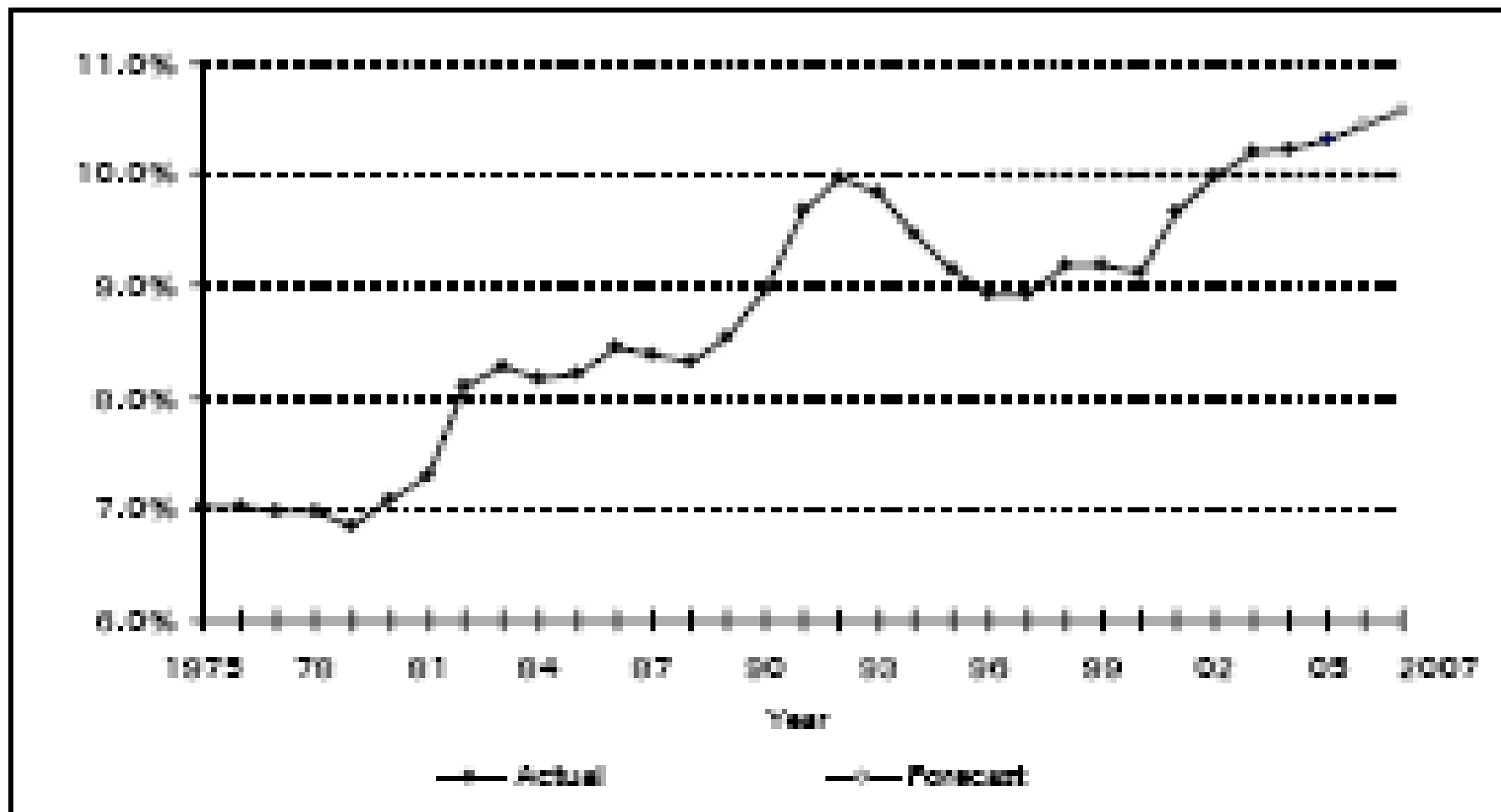


Rising costs of Health Care

Table 1.1: Health spending as % of GDP, (US\$m), 2003

Country	GDP per capita US\$	Total spend on health per capita US\$	Health spending % of GDP
US	37,658	5,635	15.0
Germany	27,094	2,996	11.1
Netherlands	30,000	2,976	9.8
France	28,645	2,903	10.1
Sweden	28,881	2,703	9.4
Italy	26,792	2,258	8.4
UK	29,826	2,231	7.5
Japan	28,395	2,139	7.5
Spain	23,889	1,835	7.7

Rising costs of Health Care Canada



Sources: National Health Expenditure Database, CIHI; GDP, Statistics Canada.

Flax and Health Care Costs

- Dr. Peter Coyte, Prof. Health Economics and CHSRF/CIHR Health Services Chair, University of Toronto
- Economic assessment and determination of health care cost potential of flax, 2005
- CVD disease and type-2 diabetes
- \$250.1 M (when dietary changes small) to \$3,915.7 M (dietary changes large)

Nutritional Composition of FLAXSEED

Fat

42 %

Polyunsaturated Fatty Acids

▪Alpha Linolenic Acid

(C18:3n-3 - ALA) Omega 3 **57 %**

FLAX OIL

8.0 g ALA/T

GROUND FLAX

1.8 g ALA/T

▪Linoleic Acid

(C18:2n-6) Omega 6 **16 %**

Saturated Fatty Acids **9%**



Optimal Balance of EFAs

- **n6:n3 ratio in typical North American diet currently as high as 20-30:1**

Simopoulos, A.P. 1999. Am J Clin Nutr. 70(suppl):560S-569S.

- **In the Women's Health Study, some women ate diets with a ratio of 33:1**

Miljanovic B 2005. Am. J. Clin. Nutr. 82(4):887-93.

- **Health Canada's current recommended ratio for optimal health is 4-10:1!**

Health and Welfare Canada. 1990. Nutrition Recommendations. The Report of the Scientific Review Committee.

Relative Risk of fatal heart disease for high vs. low intake of ALA in prospective cohort studies (RR, 95% CI)

Amount of

ALA
Eaten

2.8 g/d

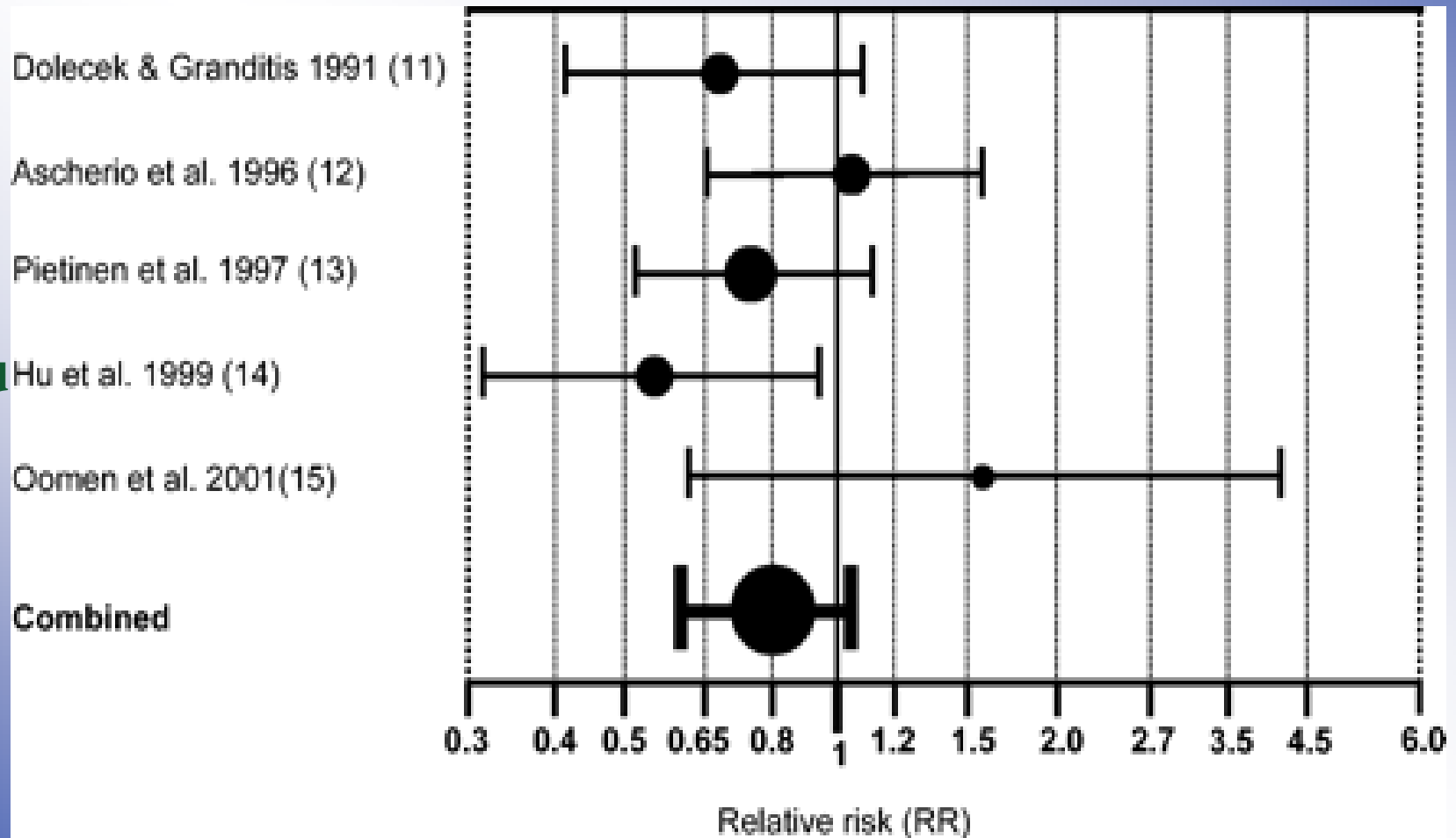
1.5 g/d

2.5 g/d

1.36 g/d

>0.52

% en



Note: density of points represents the weighting factor used for calculating the combined RR

Effects of ALA on CRP

- C-Reactive Protein is a new and important risk factor for cardiovascular disease
- Controlled clinical studies demonstrate that a diet high in ALA significantly decreases C-reactive protein
- Increasing consumption of ALA is expected to decrease risk of cardiovascular disease

Zhao, G., et al. 2004. J. Nutr; 134: 2991-2997.



ALA Effects

- Hypotensive effects

Paschos, et al. 2007. Eur. J. Clin. Nutr.

- Reduces ventricular fibrillation

- Improves the elasticity of the arterial walls

Dupasquier & Pierce, November 2007.

- Endothelium-dependent vasodilation and vascular effects improved

West, S. et al. 2005. Diabetologia.



ALA Effects

- Lowers platelet aggregation
- ALA is the main, if not only n-3 PUFA in diet of at least one billion vegetarians world wide (despite not consuming much if any fish, vegetarians do not have a higher prevalence of killer diseases than non-vegetarians)
- It is an important “nutritional brake” on the metabolism of n-6, when n-6 is consumed at excessive rates

The Glycemic Index

Public interest

- 66% shoppers "Maintain healthy blood sugars levels is important"

(Health Focus, 2005)

- 45% of Americans have used Low GI foods in the past year

(NMI Health & Wellness Trends database, 2005)

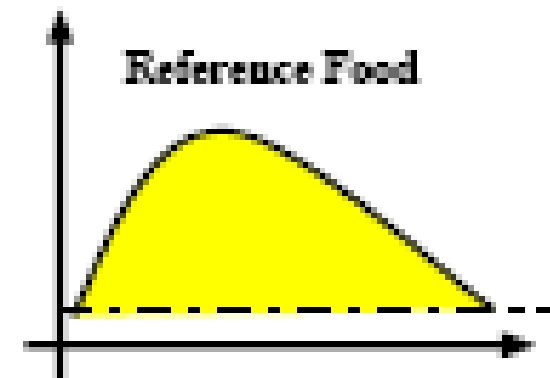
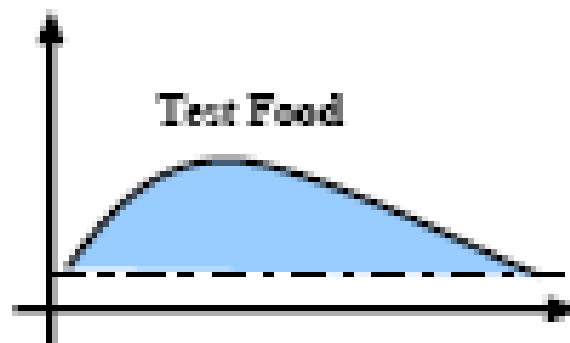
- 46% consumers "have heard of the GI" compared to 32% in 2005

(IFIC, 2007)



DEFINITION OF THE GLYCEMIC INDEX:

$$GI = \frac{\text{AUC FOR 50g CHO OF TEST FOOD}}{\text{AUC FOR 50G CHO OF REFERENCE FOOD}}$$



Commercial Examples

LOBLAWS CANADA

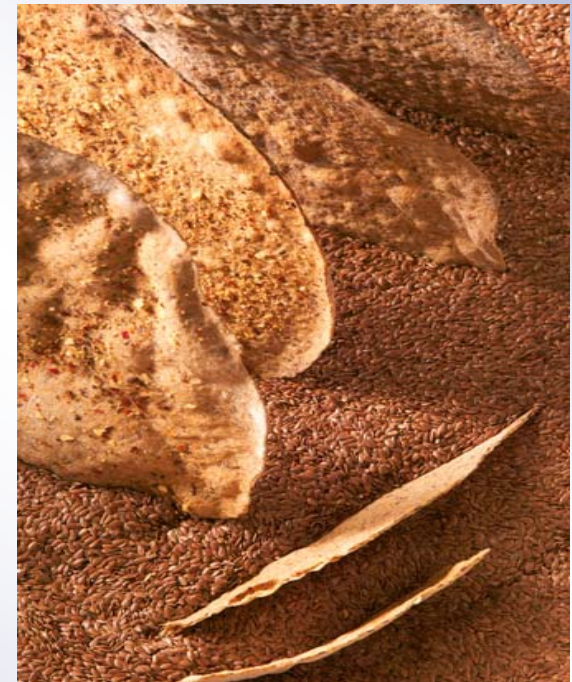
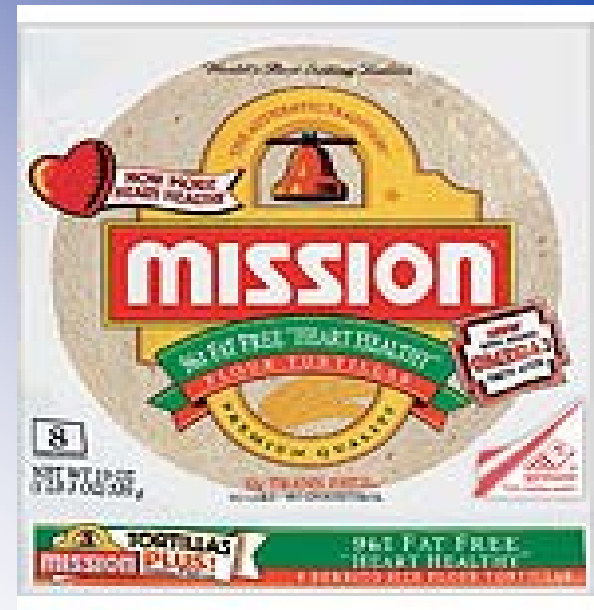


- **Multigrain Flax Loaf – 51**
- **Multi-Grain Flax Bagels – 52**
- **Flax Tortillas – 53**
- **Raisin Bran Flax Muffins – 52**



KEY PRIORITIES

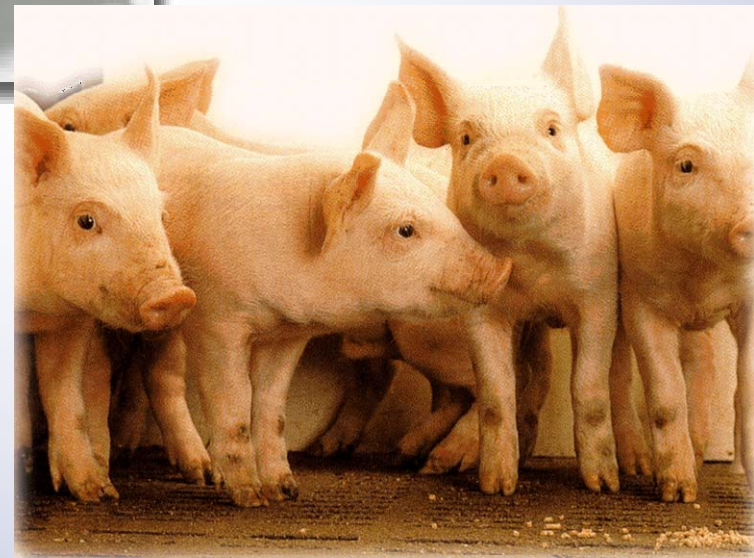
1. Emphasis unique nutritional properties of whole flaxseed
 - Research for Qualified Health Claim (CVD)
2. Confirmation of Safety in US—Generally Recognized as safe GRAS
3. Development of food animal production sector
4. Development of new healthy flax based food and supplement products



HUMAN HEALTH - FC2015

- Optimizing dietary n6/n3 fatty acids in Disease - Oxidative stress and inflammation in adults at risk for type 2 diabetes
 - *Dr. Sheila Innis, University of British Columbia*
- Glycemic Index assessment
 - *Dr. A. Jenkins, GI Labs, UT*
- Flaxseed effects on peripheral vascular disease and diabetes
 - *Dr. Grant Pierce, St Boniface Hospital Research Centre*
- High Oleic Canola – Flax oil blend & Effects on CVD
 - *Dr. Peter Jones, Richardson Centre for FFN, U Manitoba*
- Flaxseed and Cardiovascular Responses to Stress
 - *Dr. Sheila Jones, Penn State University*
- Functional food development

ANIMAL HEALTH AND NUTRITION





Visit www.fc2015.ca for more info on
FLAX AND HEALTH

