

National Cancer Institute

“Nutrigenomics and Bioactive Food Components”

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health

Unprecedented opportunities exist for use to achieve genetic potential, increase productivity and reduce the risk of disease, including cancer

Many Important Constituents

Interesting Interactions

Exceedingly Complex Area Since Many Bioactive Food Components

- Essential Nutrients- Ca, Zn, Se, Folate, Vitamin D, C
- Non-Essential
 - Phytochemicals
 - Carotenoids, Flavonoids, Indoles, Isothiocyanates, Allyl Sulfur
 - Zooxanthophylls - Conjugated linoleic acid, n-3 fatty acids
 - Fungochemicals - Several compounds in mushrooms
 - Bacteriochemical - Those formed from food fermentations and those resulting from intestinal flora

Worldwide Leading Causes of Mortality Many of Which are Linked with Eating Behaviors (2002)

Aged 15-59			Aged 60+		
Rank	Cause	Death (000)	Rank	Cause	Death (000)
1	HIV/AIDS	9227	1	Ischemic heart disease	5825
2	Ischemic Heart Disease	1332	2	Cerebrovascular disease	4689
3	Tuberculosis	1036	3	Chron obstr pulmon disease	2399
4	Road traffic injuries	814	4	Lower respiratory infections	1396
5	Cerebrovascular disease	783	5	Trachea, bronchus, lung cancer	928
6	Self-inflicted injuries	672	6	Diabetes mellitus	754
7	Violence	473	7	Hypertensive heart disease	735
8	Cirrhosis of the liver	382	8	Stomach cancer	605
9	Lower respiratory infections	352	9	Tuberculosis	495
10	Chron obstr pulmon disease	343	10	Colon and rectum cancers	477

Charts, Maps, Tables, The World Health Report, WHO 2003

Worldwide Public Health Approaches Center on Foods

MyPyramid.gov
STEPS TO A HEALTHIER YOU

Eating for Healthy Adult
New Zealanders

fruits & veggies more matters

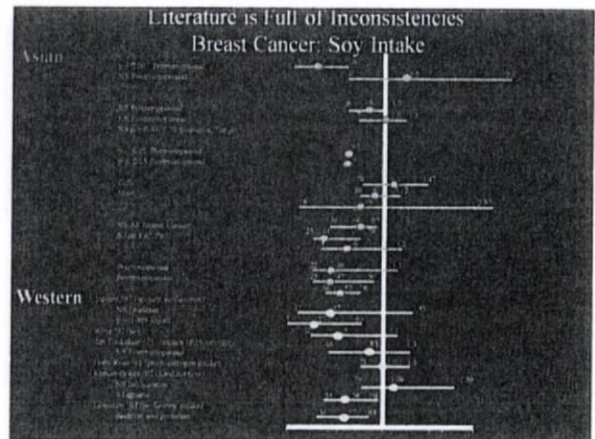
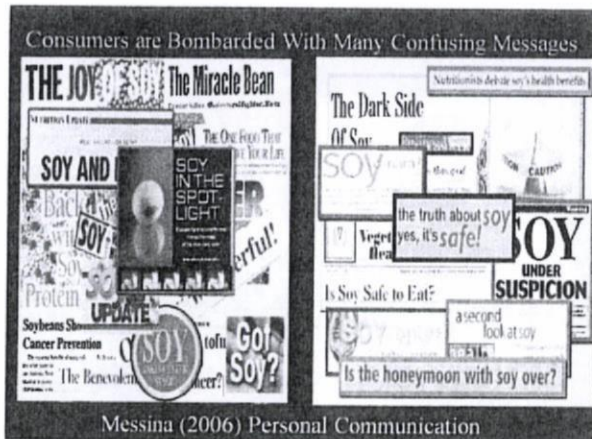
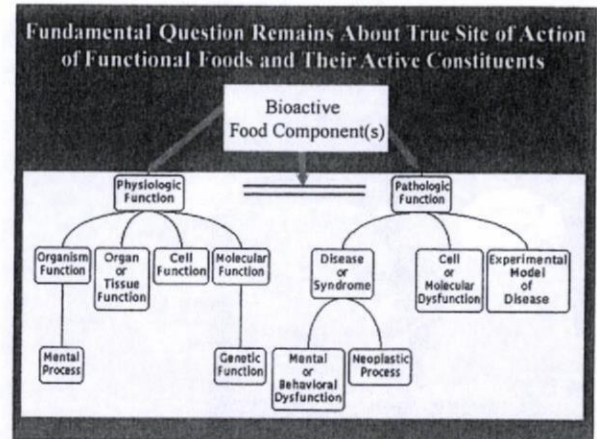
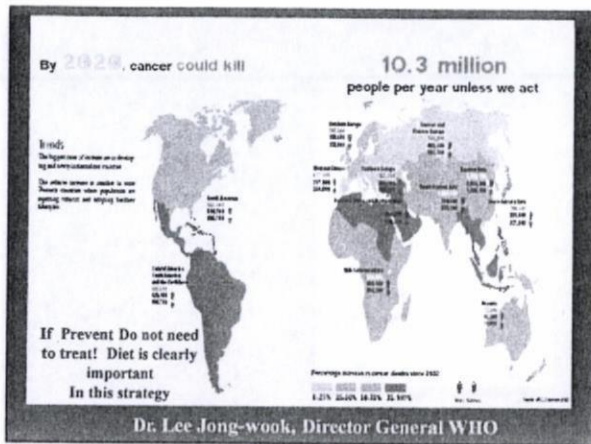
The Balance of Good Health

Evidence Based Report Showcases Inconsistencies in the Effect of Diet on Cancer Prevention

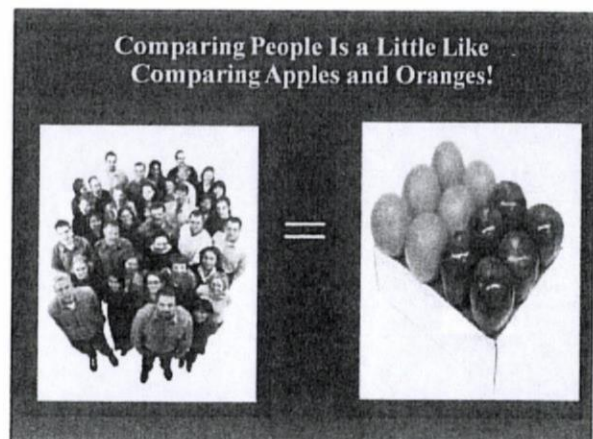
The Causes of Cancer
Richard Doll and Richard Peto

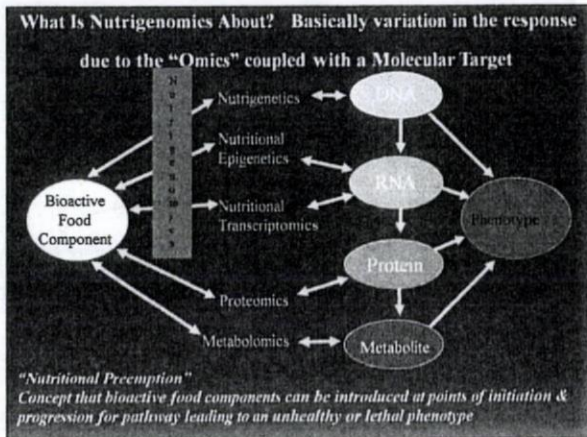
WCRF/AICR Report
Released Nov. 1-2, 2007

Diet 35%
Tobacco 30%
Other Factors 35%



Many opinions and policies based on epidemiological evidence with inadequate assessment tools and lack of attention to individuality

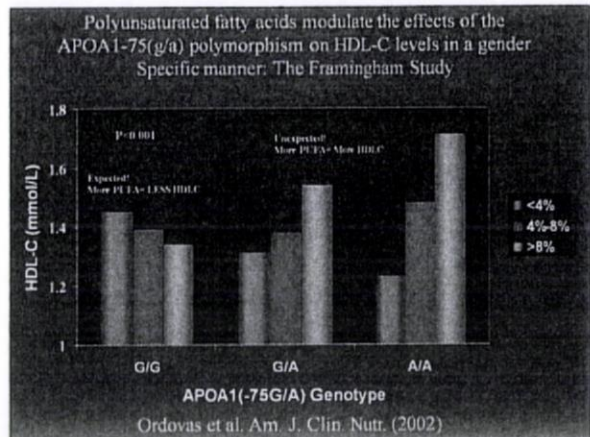
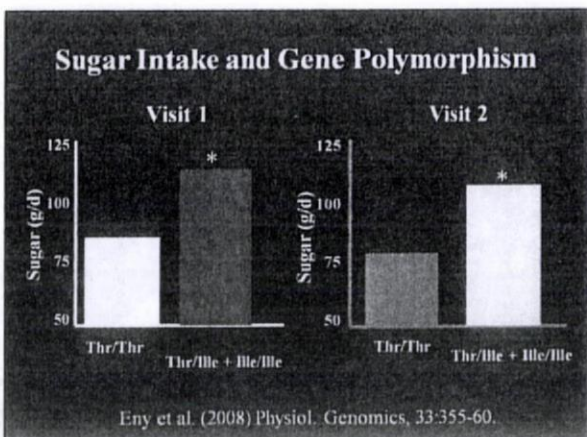
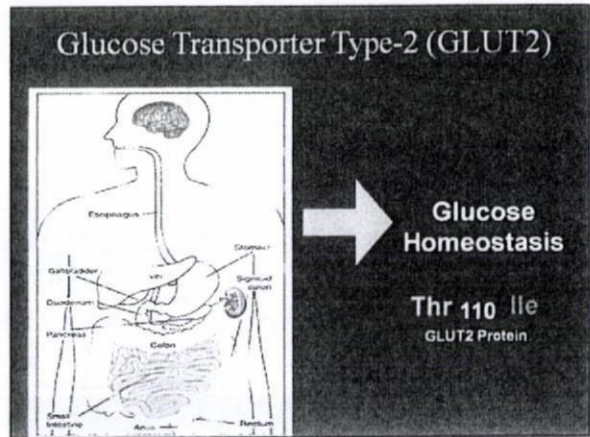
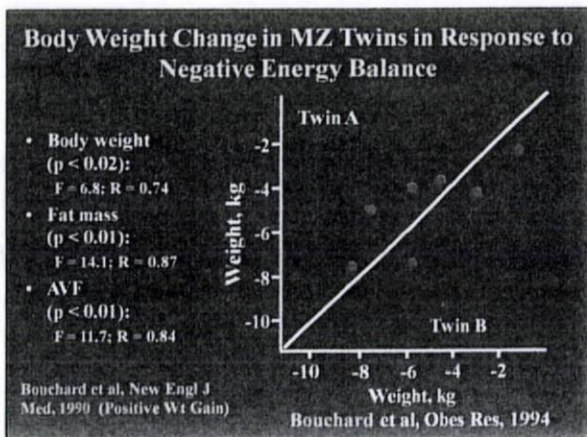


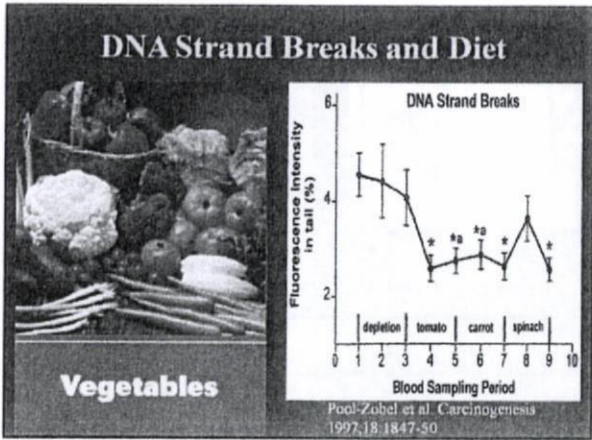
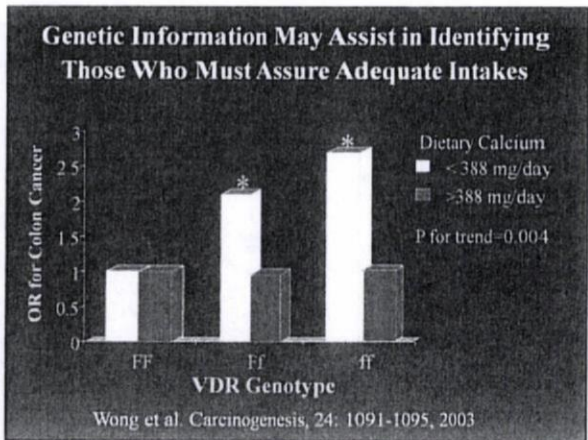
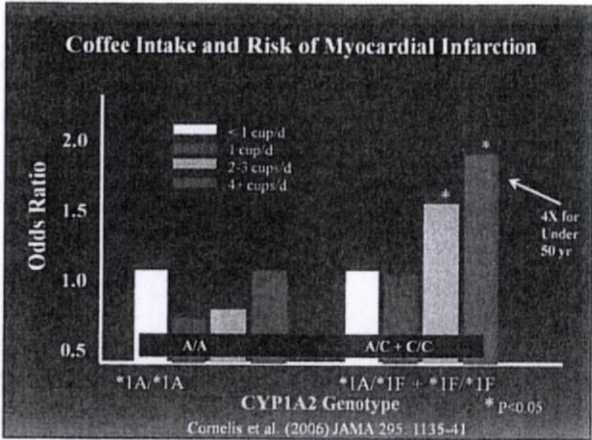


Genomics Can Influence the Response to Diet at Multiple Points

- Food preference
- Food tolerance
- Absorption
- Transport
- Metabolism
- Effect in target tissue

Lampe and Potter, in *Gene-Envir Interactions* (2006)
 Modified from Lampe (per communication)

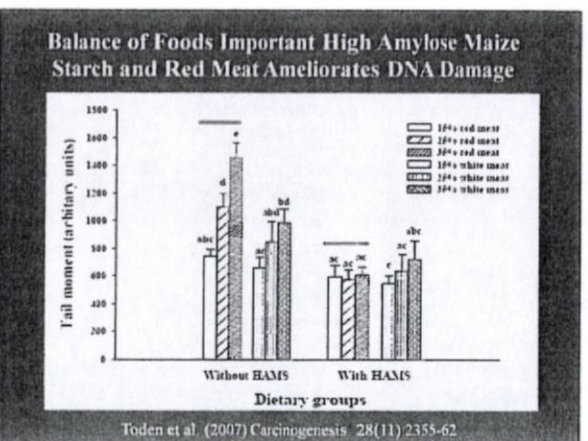
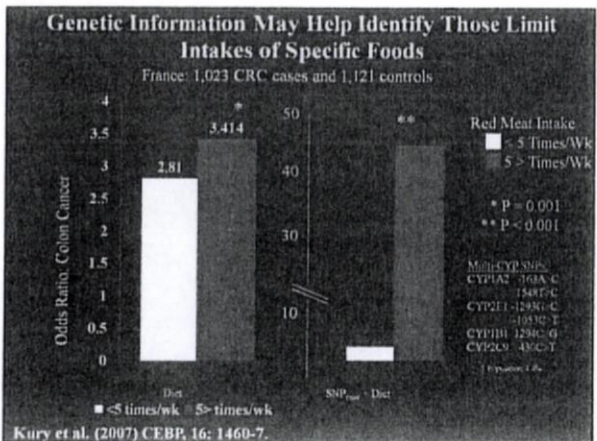


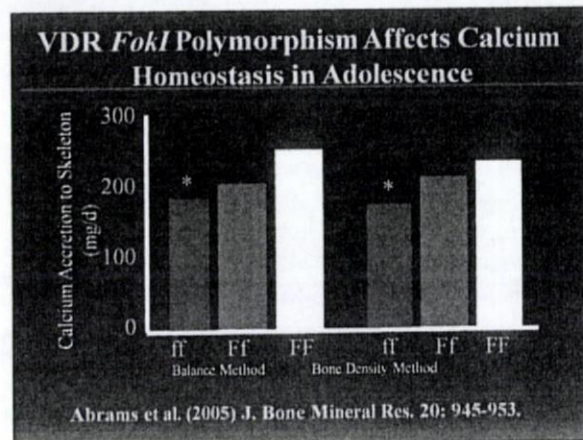
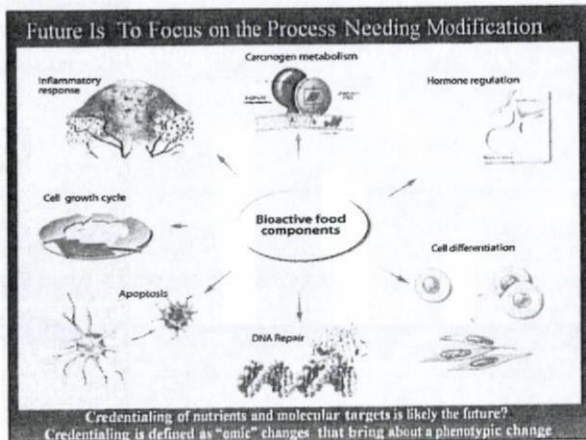


XRCC1 (Arg399Gln) Polymorphisms May Influence the Response to Lycopene

Lycopene Intake (µg/day)	Arg/Gln + Gln/Gln "low-risk"	Arg/Arg "high-risk"
High	0.82 (0.33-2.01)	0.21 (0.06-0.71)
Medium	0.97 (0.39-2.44)	0.59 (0.23-1.50)
Low	1.0	1.0

Goodman et al., (2006) Nutr. CA, 55(1):13-20. *P trend < 0.01





Genome-wide association study identifies novel breast cancer susceptibility loci

A genome-wide association study identifies alleles in *FGFR2* associated with risk of sporadic postmenopausal breast cancer

Common variants on chromosomes 2q35 and 16q12 confer susceptibility to estrogen receptor-positive breast cancer

Diet and GWAS are beginning!!

Ferguson et al. (2007) Cell Mol Life 64(23):3105-18.
Not all that enlightening probably because can't monitor intake of specific bioactive components in the diet

23 and Me Genotyping

-\$999 /salva kit
-Results in 2-4 weeks
-Illumina HumanHap 550 + BeadChip reads nearly 600,000 SNP's

- Uploads information to online database
- Has odds calculator to suggest common health concerns for person with specific genetic composition

Compare your genes with friends, family and the world!!

Exceeding complex area since about 30, 000 Genes, 8-10 Million SNPs

Nutrigenomic Testing Promises vs. Reality!

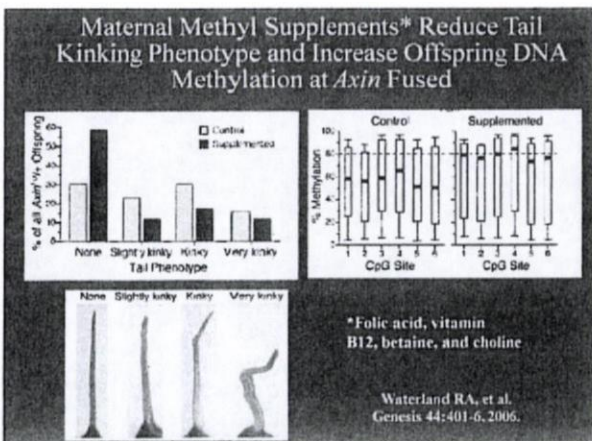
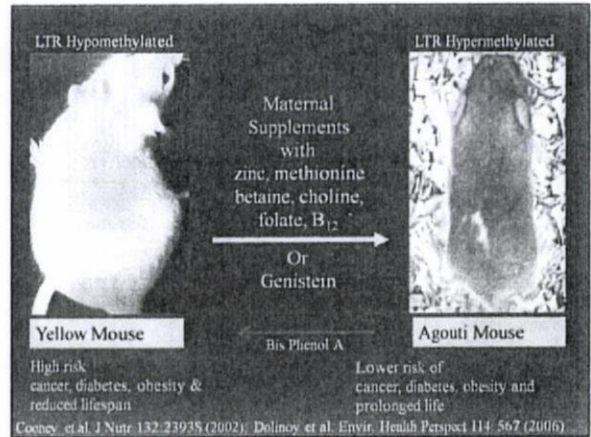
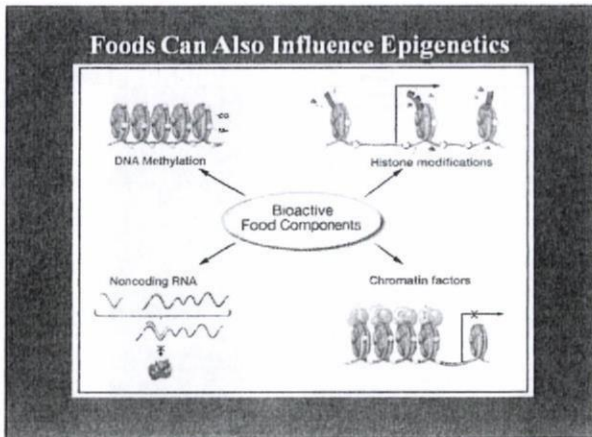
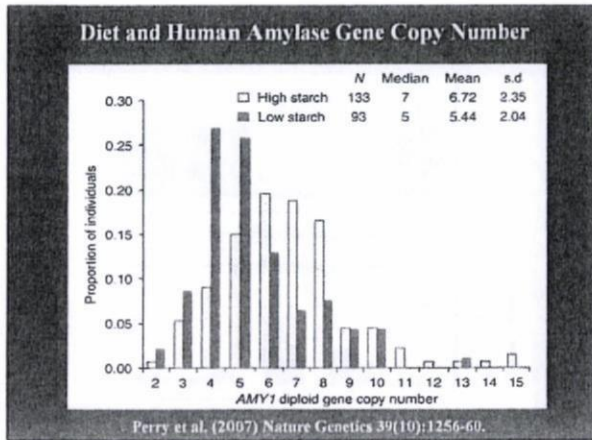
- **Seiona Nutrition-Gene Test**
 - Seiona 19 genes determines whether your DNA contains gene variants that have been associated with 5 key health areas: bone health, heart health, antioxidant/detoxification, insulin sensitivity, and inflammation.
 - Cost about \$300.
- **Genelex** The panel examines 19 genes that play major roles in your body's detoxification capacity, antioxidant capacity, heart health, bone health, insulin sensitivity, and tissue repair.
 - About \$500.

The overall contribution of Copy Number Variance (CNV) to complex phenotypes expression levels of 14,925 transcripts with SNPs and CNVs in individuals who are part of the International HapMap project was evaluated.

SNPs and CNVs captured 83.6% and 17.7% of the total detected genetic variation in gene expression, respectively.

The signals from the two types of variation had little overlap

Stranger et al (2007) Science. 315(5813):848-53



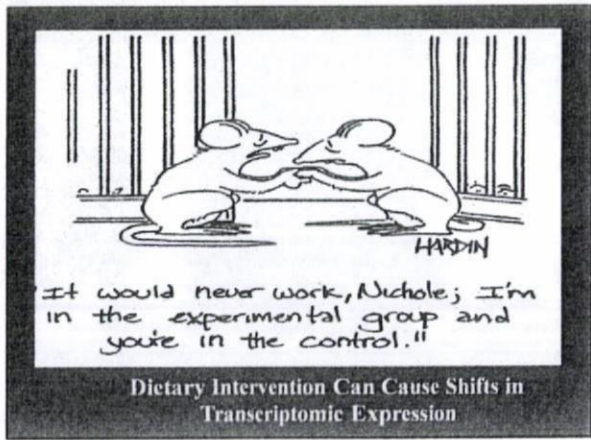
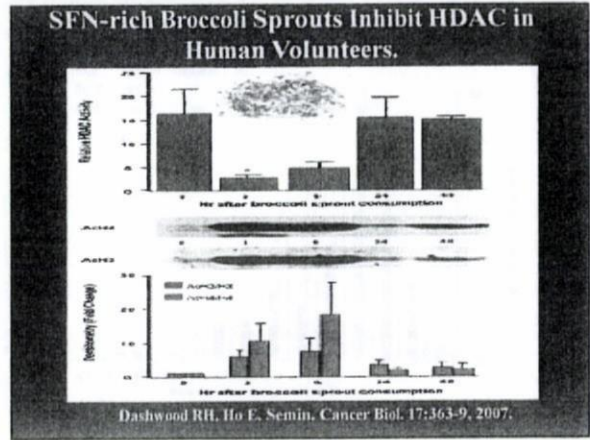
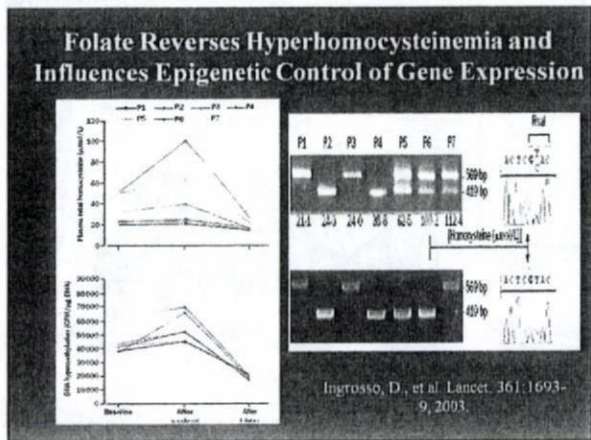
Frontiers in Cellular Energetics, Diet & Cancer Prevention

MARCH 12, 2006

Oxidation of either a single guanine to 8-oxoguanine or of a single 5mC to 5-hydroxymethylcytosine significantly inhibits binding of the methyl-CpG binding proteins to the oligonucleotide duplex, reducing the binding affinity by at least an order of magnitude.

Oxidative damage to DNA could therefore result in heritable, epigenetic changes in chromatin organization.

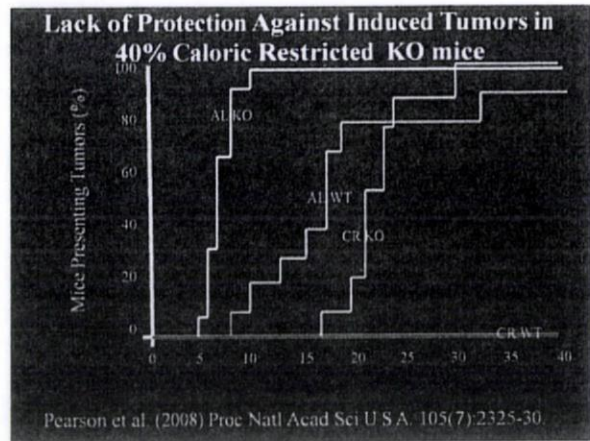
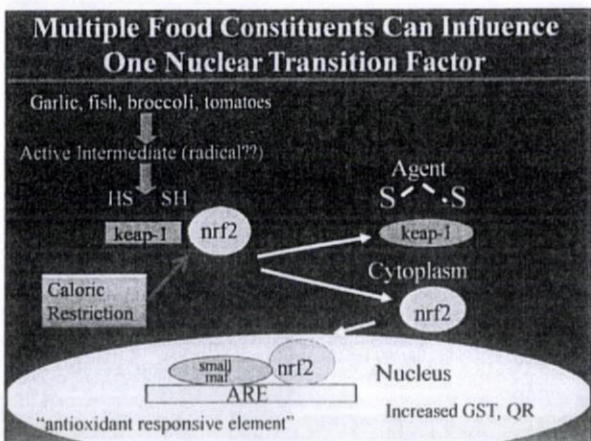
Valinluck et al. Nucleic Acids Res. (2004) 32:4100.

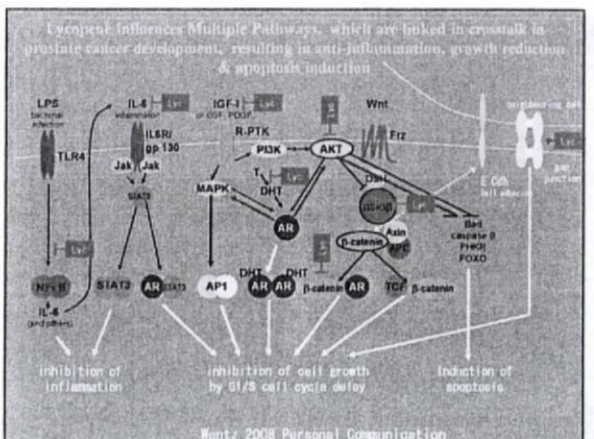
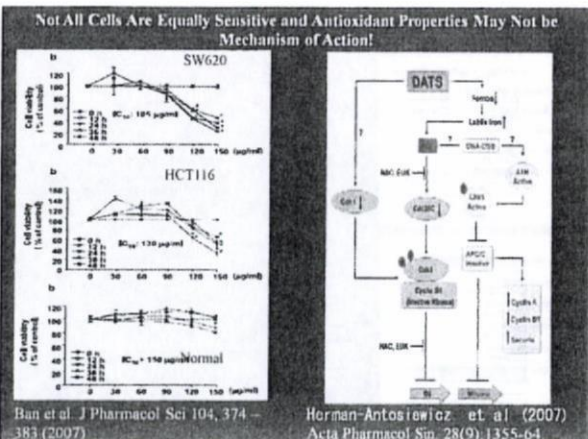
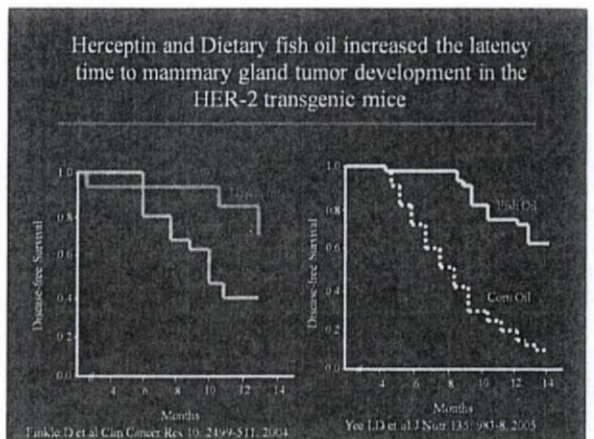
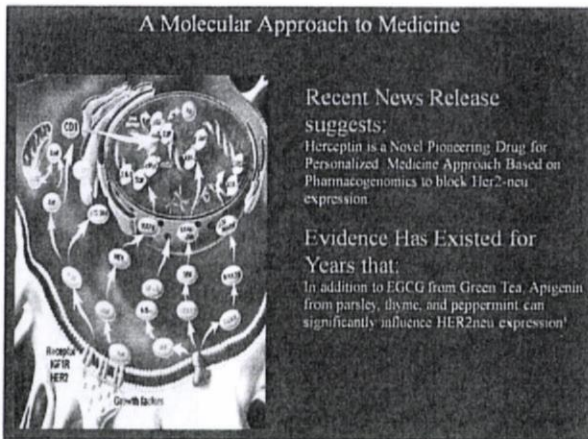
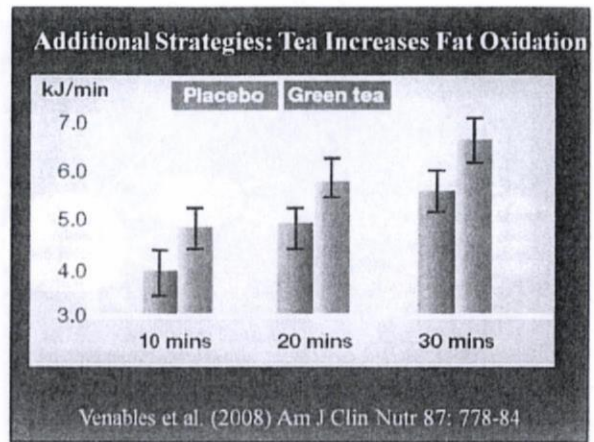
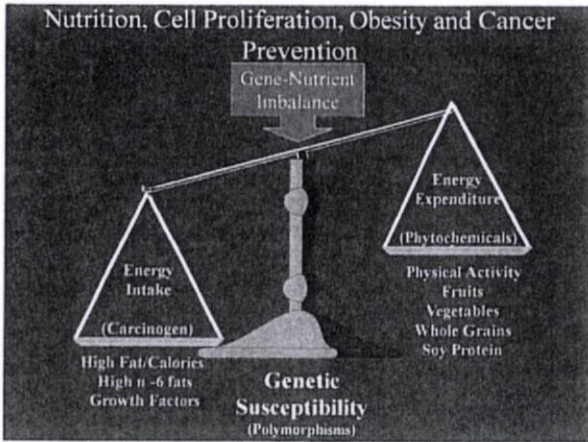


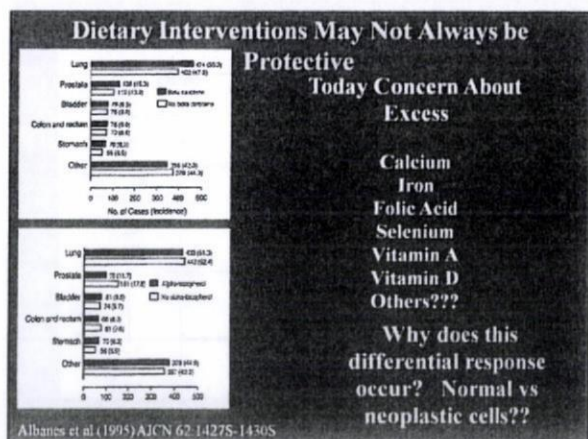
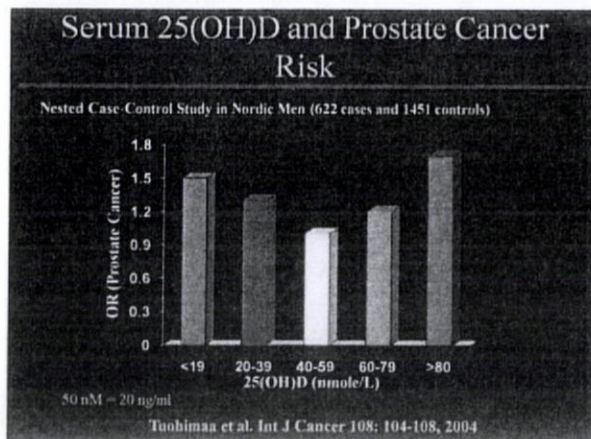
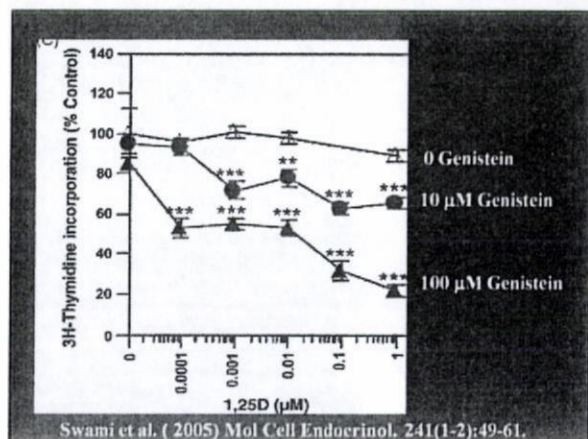
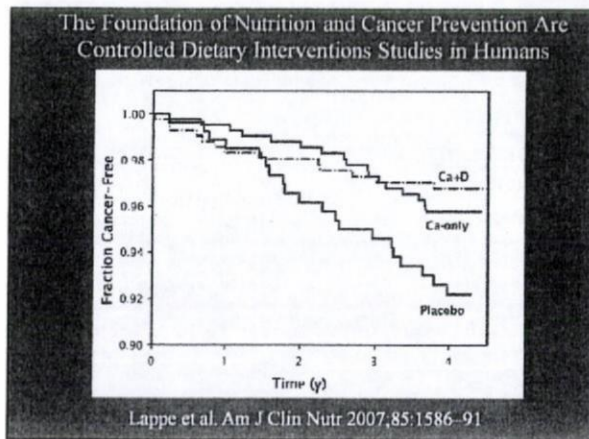
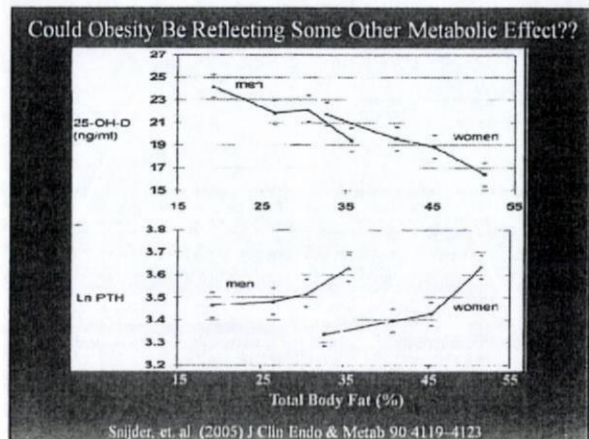
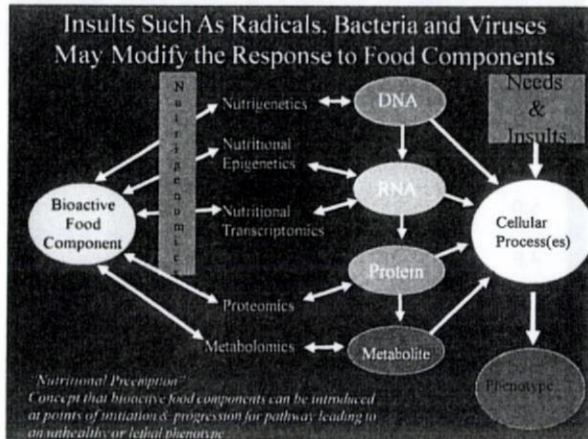
Gene Expression Data from Dietary Intervention

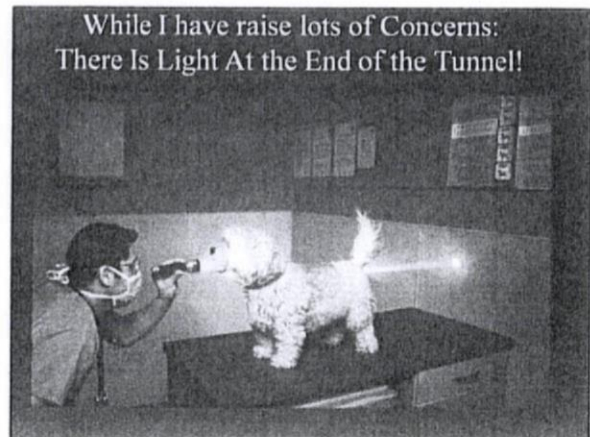
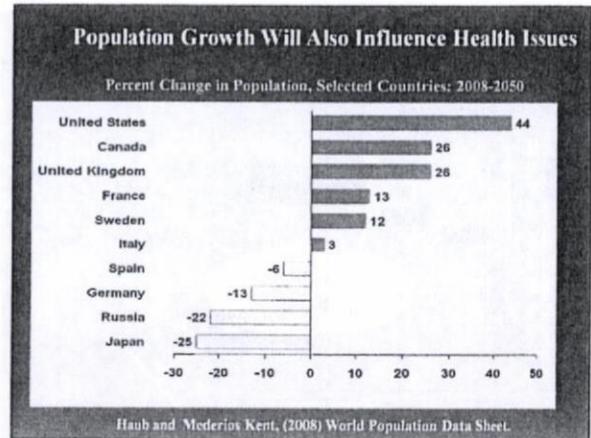
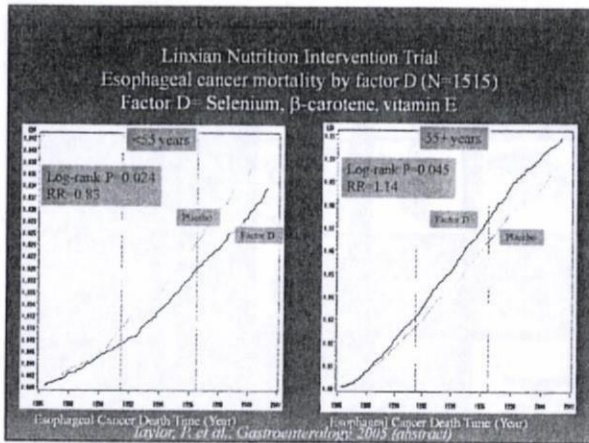
HUGO	NAME	PRE-DIET	POST-DIET	AVERAGE RELATIVE EXPRESSION
MMP7	Matrix metalloproteinase 7	1	2	13.1
OLFM4	Olfactomedin 4	1	2	6.9
BF	B-factor protein	1	2	6.4
KIF-2R	Insulin-like growth factor-2 receptor	1	2	3.5
VMP1	Likely ortholog of rat vacuole membrane protein 1	1	2	3.3
TGFB14	Transforming growth factor beta 1 induced transcript 4	1	2	3.2
IER3	Immediate early response 3	1	2	3.2
CCT2	Chaperonin containing TCP1, subunit 2 (beta)	1	2	3.1
HLA-DRB5	Major histocompatibility complex class II DR beta 4	1	2	2.8
CXCR4	Chemokine (C-X-C motif) receptor 4	1	2	2.8
LUM	Lumican	1	2	2.7
CCL2	Chemokine (C-C motif) ligand 2	1	2	2.6
DUSP1	Dual specificity phosphatase 1	1	2	2.6
IER2	Immediate early response 2	1	2	2.5
SPARCL1	SPARC-like 1	1	2	2.3
TBX3	T-box 3	1	2	2.1
ETS1	V-ets erythroblastosis virus E26 oncogene homolog 1	1	2	2.0
SLC25A3	Solute carrier family 25 member 3	1	2	0.6
PRDX1	Peroxisidin 1	1	2	0.5
ABAT	4-aminobutyrate aminotransferase	1	2	0.4
FOLH1	Folate hydrolase (prostate-specific membrane antigen)	1	2	0.4
BPGM	2,3-bisphosphoglycerate mutase	1	2	0.4
MCG15037	Similar to RIKEN cDNA OR10008P18 gene	1	2	0.3

Liu et al. *Cancer Epidemiol. Biomarkers Prev.* 2007;16:2130-4

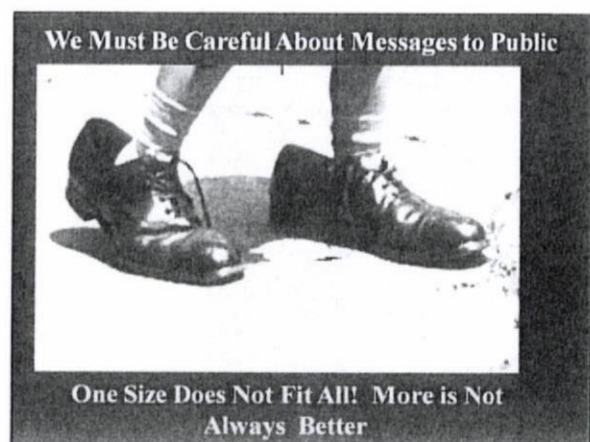


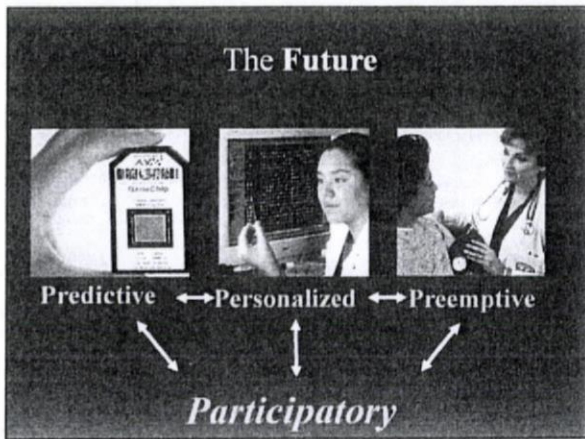
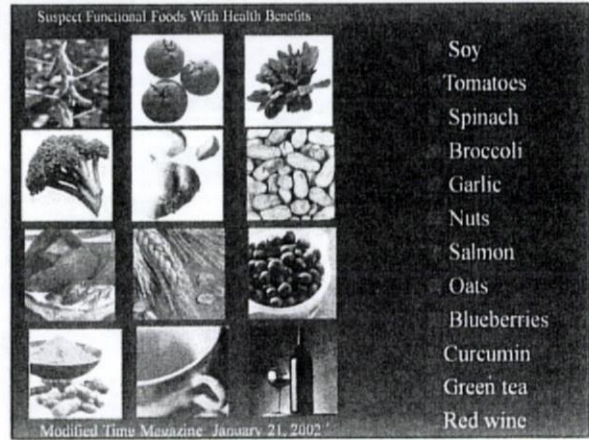
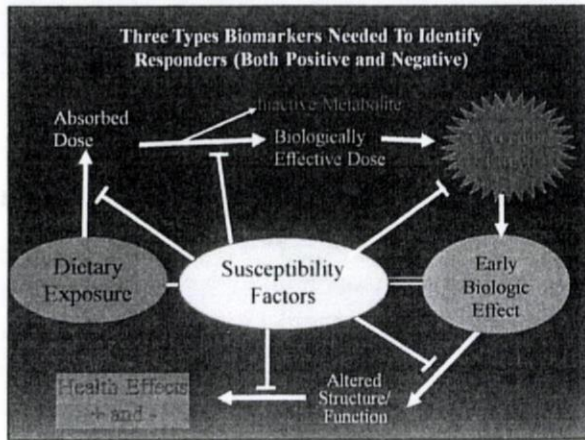






- WCRF/AICR Recommendations**
1. Be as lean as possible without being underweight
 2. Be physically active.
 3. Avoid Sugary drinks.
 4. Eat more of a variety of vegetables, fruits, whole grains, and legumes.
 5. Limit consumption of red meats
 6. If consume alcohol do so in moderation
 7. Limit consumption of salty foods
 8. Don't use supplement to protect against cancer







Jun Tamagawa
Director,

**Office of Health Policy on Newly Developed Foods Department of Food Safety,
Pharmaceutical and Food Safety Bureau Ministry of Health, Labour and Welfare**

April 2007-present Director
Office of Health Policy on Newly Developed Foods Department of Food Safety,
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Ministry of Health, Labour and Welfare

April 2004- Associate professor
Faculty of Humanities, Law and Economics
Mie University


August 2003- Deputy Director
Policy Planning and Communication Division
Department of Food Safety
Pharmaceutical and Food Safety Bureau
Ministry of Health, Labour and Welfare

July 2003- Deputy Director
Office of Health Policy on Newly Developed Foods
Department of Food Safety
Pharmaceutical and Food Safety Bureau
Ministry of Health, Labour and Welfare

玉川 淳


**厚生労働省医薬食品局食品安全部基準審査課
新開発食品保健対策室長**

平成19年 4月 現職
平成16年 4月 国立大学法人三重大学人文学部助教授
平成15年 8月 医薬食品局食品安全部企画情報課長補佐
平成15年 7月 医薬食品局食品安全部基準審査課 新開発食品保健対策室室長補佐



Health Claim and FOSHU System in Japan

JUN TAMAGAWA
Director
Office of Health Policies on Newly Developed Foods
Department of Food Safety
Pharmaceutical and Food Safety Bureau
Ministry of Health, Labour and Welfare



What is "Food"?

Food Products (Food Sanitation Law)

Foods with health claims
(So-called health foods)


Other foods

Approximately ¥2 trillion

Pharmaceutical Products (Pharmaceutical Affairs Law)



- Listed in the Japanese Pharmacopoeia
- Used for diagnosis, treatment and prevention of diseases
- Used for purposes that have an effect on the structure and function of the body

Approximately ¥7.4 trillion



Categories of Food with Health Claims

	Food with Health Claims		
<p>Medical Drugs (including newly appointed quasi-drugs)</p>	<p>Food with Nutrient Functional Claims</p>	<p>Food for Specified Health Uses</p>	<p>Food Products (including so-called "health foods")</p>

Categories of Foods Classified by Use

Pharmaceuticals (including quasi-drugs)

- Foods for special dietary uses: For use by persons with medical conditions, pregnant and parturient women, infants, the elderly, and for treatment of allergies
- Foods with health claims: Foods for specified health uses (product-based approval type)
- Foods with nutrient function claims (regulatory standard type)

- Foods can state claims for special dietary use (requires screening by the Ministry of Health, Labour and Welfare)
- Foods can state health claims (requires screening by the Ministry of Health, Labour and Welfare)
- Foods can state nutrient function claims (does not require screening by the Ministry of Health, Labour and Welfare)


No approved logo

General food products


- So-called health foods
- Other general food products

Cannot display effects or functions

"Health Foods" = Foods with Health Claims + So-called Health Foods



Foods with Health Claims



What is the System of Foods with Health Claims?

- Implemented in April 2001.
- Under this system, certain of the numerous and diverse "so-called health foods" that meet certain conditions can be referred to as "foods with health claims."
- There are two categories—"foods for specified health uses" and "foods with nutrient function claims" with different approval conditions, purposes, and functions, etc.



Background to the Creation of the System of Foods with Health Claims

- (1) Concern about the health of the public is increasing against a backdrop of confusion concerning eating habits, increases in lifestyle-related diseases, rising healthcare costs, etc. and demands concerning food functions are becoming more complex and diverse.
- (2) Advances in food science and technological development are leading to the development of new foods with varied functions.
- (3) Developments in regulatory schemes and internationalization are leading to reviews of food and pharmaceutical classifications.
- (4) Demands from consumers for the provisions of appropriate information concerning foods are increasing.
- (5) There have been some incidents of improper labeling and ingestion methods leading to risks to health and complaints concerning foods.
- (6) In overseas, there has been increased consideration of regulatory standards for foods that have certain functions such as labeling that emphasizes health.



Foods with Nutrient Function Claims



What are Foods with Nutrient Function Claims?

- Foods with nutrient function claims are foods that supply or supplement the nutritional components (vitamins, minerals, etc.) that are necessary for sound growth, development of the body and the maintenance of health.
- With advancing age, confusion concerning proper eating habits, and others, it has become increasingly difficult to maintain normal eating habits; and foods with nutrient function claims are foods that supply or supplement nutritional components when it is not possible to obtain the necessary nutritional components each day.



Handling of Foods with Nutrient Function Claims

- (1) The system for foods with nutrient function claims is a self-certifying one that does not require the filing of individual applications for approval or notice, etc. to the Minister of Health, Labour and Welfare (MHLW).
- (2) The standards adopted by MHLW include the following:
 - Regulatory standards that set upper and lower limits on nutrient functional components included that are ingested daily
 - Labeling standards that specify the content of functions that can be indicated and warnings concerning the nutritional components that are ingested
 Products with nutrient function claims must comply with these standards.
- (3) Foods whose nutritional component functions may be labeled as foods with nutrient function claims are currently 12 vitamins and five minerals.



Regulatory Standards for Foods with Nutrient Function Claims

Minerals					
	Zinc	Calcium	Iron	Copper	Magnesium
Upper limit	15mg	600mg	10mg	6mg	300mg
Lower limit	2.10mg	210mg	2.25mg	0.18mg	75mg
Vitamins					
	Niacin	Pantothenic Acid	Biotin	Vitamin A*	
Upper limit	60mg	30mg	500µg	600µg(2,000IU)	
Lower limit	3.3mg	1.65mg	14µg	135µg(450IU)	
	Vitamin B1	Vitamin B2	Vitamin B6	Vitamin B12	
Upper limit	25mg	12mg	10mg	60µg	
Lower limit	0.30mg	0.33mg	0.30mg	0.60µg	
	Vitamin C	Vitamin D	Vitamin E	Folic Acid	
Upper limit	1,000mg	5.0µg(200IU)	150mg	200µg	
Lower limit	24mg	1.50µg(60IU)	2.4mg	60µg	

*Beta carotene, a precursor of vitamin A, is designated as a source of vitamin A for foods with nutrient function claims, but in that case the upper limit is 7,200 µg and the lower limit is 1,620 µg.



Representative Labels of Leading Product Formats for Foods with Nutrient Function Claims

Tablets, etc. Chewable Multivitamins

(Vitamin B1 is a nutritional element that assists in the production of energy from carbohydrates and in maintaining the health of the skin and mucous membranes.)



Capsules: Germ Oil Capsules

(Vitamin E is a nutritional element that has antioxidant effects that prevent oxidation of lipids in the body and helps maintain cellular health.)



Powder, etc. Powdered Calcium

(Calcium is a nutritional element necessary for bone and tooth formation.)



Fruit Juice: Fruit Drinks with Iron

(Iron is a nutritional element necessary for red blood cell formation.)



Nutrient Function Claims and Warning Indication

Nutritional Ingredient	Function Claims	Warning Indication
Vitamin A	helps to maintain vision in the dark, and helps to maintain skin and mucosa healthy.	Increased intake of this product will not result in curing diseases nor promoting health. Please comply with the advisable daily intake. Women within the third months of pregnancy or women considering to be pregnant should be careful of over consumption.
Vitamin C	helps to maintain skin and mucosa healthy and has anti-oxidizing effect.	Increased intake of this product will not result in curing diseases nor promoting health. Please comply with the advisable daily intake.
Calcium	necessary in the development of bone and teeth.	Increased intake of this product will not result in curing diseases nor promoting health. Please comply with the advisable daily intake.

Ingredients Added to Foods with Nutrient Function Claims (Review)

Adoption of regulatory standards is currently being reviewed for the remaining vitamins and minerals for which nutrient function claims have not been approved (eight nutritional elements) from the perspective of normalization of function claims and providing appropriate information to consumers.


* The remaining vitamins and minerals are vitamin K, phosphorus, potassium, iodine, manganese, selenium, chromium, molybdenum

<Vitamin K, Phosphorus, and Potassium>
According to the nutritional element intake volumes from a national nutrition survey, the required amounts of these three nutritional elements are obtained across all ages groups.

<Iodine, Manganese, Selenium, Chromium, and Molybdenum>
No surveys of intake volumes, etc. have been conducted.

<Conclusions>
Accordingly, from the perspective of providing appropriate information to consumers concerning these eight nutritional elements, the database on safety and effectiveness for health foods of the National Institute of Health and Nutrition will be used for the time being to provide scientific information concerning nutritional ingredients.

Foods for Specified Health Uses

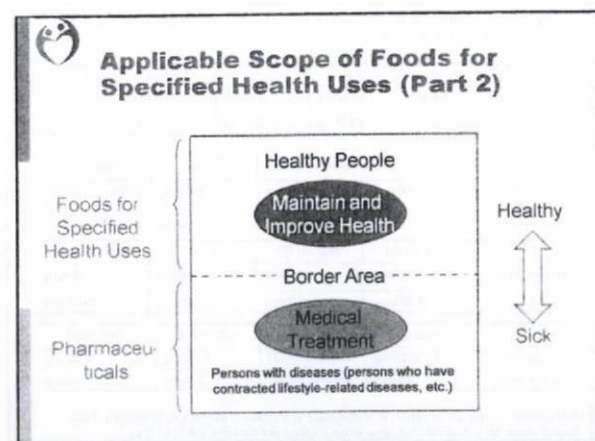


What are Foods for Specified Health Uses?

- Foods for specified health uses are foods that include functional health ingredients with physiological functions and biological activity of the body and that state claims to the effect that the expected health functions can be expected from intake of the food with the intention of achieving a specific health function in eating habits.
- When foods are sold as foods for specified health uses, a screening by the national government must be conducted concerning the efficacy of the individual physiological functions and specified health functions as well as safety, etc. and approval must be obtained.

Applicable Scope of Foods for Specified Health Uses (Part 1)

Foods for specified health uses are foods that contribute to improving diets and thereby maintaining or improving the health of persons who have not yet contracted lifestyle-related diseases, etc. that arise from eating habits or who are on the verge of contracting such diseases.



Categories of Foods for Specified Health Uses

- **Foods for Specified Health Uses**

- **Foods for Specified Health Uses (regulatory standard type)**

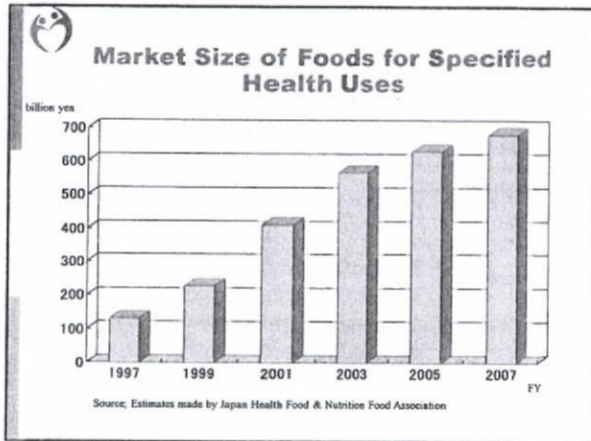

Those foods for specified health uses are foods that are capable of undergoing administrative review as there is established scientific basis concerning these foods such as an adequate approval record and that are approved under the regulatory standards without individual screening by the review committee.
- **Foods for Specified Health Uses (disease risk reduction claims)**


Those foods for specified health uses are foods that can indicate a reduction of diseases risks when the components have been medically and nutritionally established to reduce the risk of diseases.
- **Conditional Foods for Specified Health Uses**


Those foods concerning which certain effects have been scientifically confirmed but do not reach the level of ordinary foods for specified health uses and approval is conditioned on indication of the limited scientific basis

Breakdown of Designated Foods for Specified Health Uses (as of November 19, 2008)

Category	Number
Foods for specified health uses	531
Conditional foods for specified health uses	1
Foods for specified health uses (regulatory standard type)	18
Foods for specified health uses (disease risk reduction claims)	6
Foods for specified health uses (re-approved, etc.)	264
Total	820



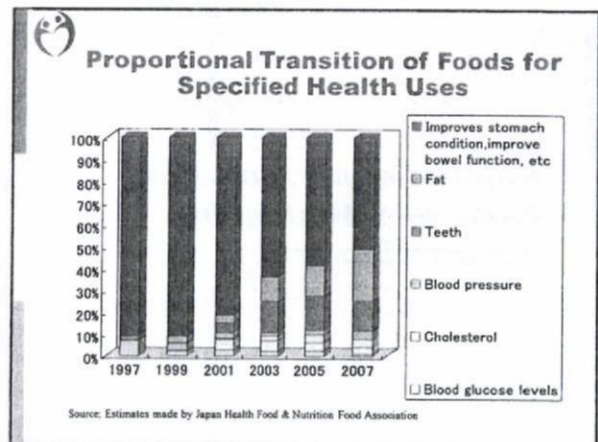
Approval Requirements for Foods for Specified Health Uses

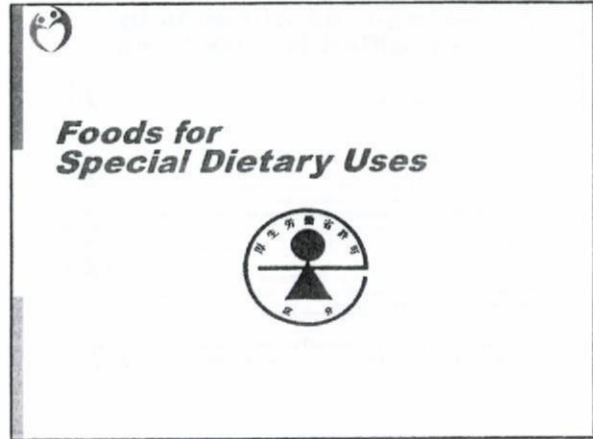
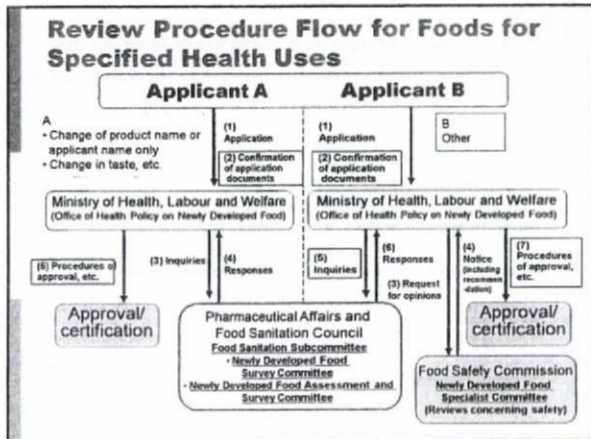
- Efficacy in humans has been clearly established.
- There are no recognized safety problems (toxicity testing using animals, confirmation of effects in case of overdose, etc.)
- There are no nutritional problems (excessive salt, etc.)
- Compliance with products standards until the food is consumed has been confirmed.
- Quality control methods are established (product and ingredient standards, manufacturing methods, testing and inspections, etc.)

Classification of Approved Foods for Specified Health Uses by Health Effects

Content of Labeled Health Effects	Representative Ingredients	Number Approved	Percentage to total approved products (820 products)
Improves stomach condition, improves bowel function, etc.	Various oligosaccharides, lactulose, bifidobacteria, various lactic acid bacteria, dietary fiber (indigestible dextrin, polydextrose, pear gum, psyllium seed coat, etc.)	301	36.7
Blood glucose levels	Indigestible dextrin, wheat albumin, guava leaf polyphenol, L-arabinose, etc.	119	14.5
Blood pressure	Lactitriptide, caseinododecapeptide, mucicic acid glycoside (ganiposidic acid), sardine peptide, etc.	102	12.4
Cholesterol	Chitosan, soy bean protein, low-molecular sodium alginate	95	11.6
Teeth	Parinarose, multivita, erythritol, etc.	65	7.9
Fat	Diacylglycerol, globin protein reagent, etc.	60	7.3
Cholesterol and stomach condition, cholesterol and fat, etc.	Low-molecular sodium alginate, psyllium seed coat dietary fiber, etc.	33	4.0
Bones	Soy isoflavon, myofibrin basic protein (MBP), etc.	30	3.7
Mineral absorption	Calcium citrate malate, caseinophosphopeptides, heme iron, fructooligosaccharide, etc.	6	0.7

As of November 19, 2008





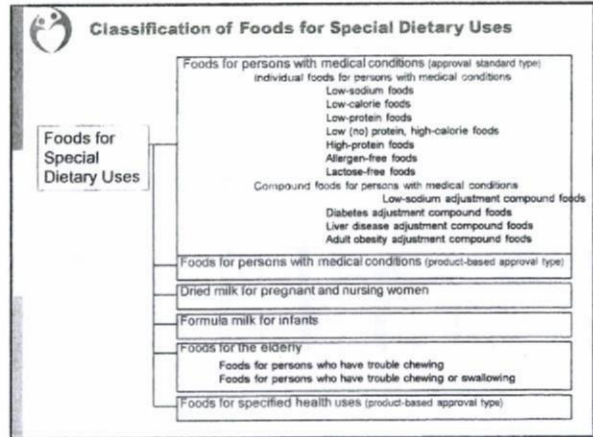
What are Foods for Special Dietary Uses?

○ Foods for special dietary uses are foods for persons with medical conditions, dried milk for pregnant and nursing women, formula milk for infants, foods for the elderly and that are labeled for special purposes such as the development of persons with medical conditions, etc. and maintenance and restoration of health.

○ When approving labeling, the suitability of those items for which there are established approval standards is reviewed and individual assessments are conducted for those items without approval standards

○ Food formats include individual foods (soy sauce, jams, etc.) and compound foods (combinations of multiple foods)

○ Under the Health Promotion Law, approval for special-purpose labeling includes foods for specified health uses



Regulations Prohibiting False and Misleading Advertising, etc.

Prohibition of False and Misleading Labeling, etc. under the Food Sanitation Law

False or misleading labeling or advertising that poses a risk of harm to public health is prohibited (Food Sanitation Law, Article 20)

Violation

- Revocation of business license, etc.
- Disposal of foods, etc.
- Penalties (imprisonment, fines)

Prohibition of False and Misleading Labeling, etc. concerning Health Maintenance and Promotion Effects, etc.
 (Related to the Health Promotion Law, Articles 32-2 and 32-3) [Effective August 29, 2003]

No person may engage in advertising or other labeling concerning a food that is offered for sale that is:

- (1) Differs substantially from the facts, or
- (2) Substantially confuses people

With respect to health maintenance or promotion effects.

↓ Violation

If there is a risk of a significant impact on the maintenance or promotion of the health of the public, a recommendation shall be issued concerning the necessary measures that should be taken (Minister of Health, Labour and Welfare and heads of local health offices).

If the measures specified in the recommendation are not taken without due grounds, the person in question shall be ordered to take the specified measures (Minister of Health, Labour and Welfare and heads of local health offices).

If the person does not comply with the order, penalties shall be imposed (imprisonment of six months or less or a fine of 1 million yen or less).

Decision-Making Flow under the Provisions of Article 32-2
 Labeling concerning Foods That Are Offered for Sale

Can the item objectively be determined to be advertising?
 (1) The intent of attracting customers (encouraging purchasing intent on the part of customers) is clear;
 (2) The name of a specific food, etc. is clear; and
 (3) The general public can understand the content.

Does the item claim health maintenance or promotion effects?
 (1) Health maintenance or promotion effects
 (2) Matters specified by Ministry of Health, Labour and Welfare ordinances
 (3) Indirect health maintenance or promotion effects, etc.

Does the advertising differ substantially from the facts or substantially confuse people?
 When determining if the advertising differs substantially from the facts or substantially confuses people, the decision is based on the overall content and the impression and understanding of the general public.
 A decision is made taking into consideration the detrimental impact on the health of the public based on the "subject food (does the food lend itself to incorrect expectations?)" and the "degree of strength of the appeal."

Relationship with Regulation of Advertising, etc. under Other Laws

- Pharmaceutical Affairs Law
(Prohibition of advertising of medical products prior to approval, etc.)
- Act against Unjustifiable Premiums and Misleading Representations
(Regulations concerning transactions involving products and services)
- Specific Commercial Transaction Law
(Fairness in transactions involving designated products and preventing harm to purchasers)
- JAS (Japanese Agricultural Standard) Law
(Regulations concerning standardization and proper labeling of agricultural and forestry products)

Information System on Safety and Effectiveness for Health Foods, etc.

Information System on Safety and Effectiveness for Health Foods, etc.

URL: http://www.mhlw.go.jp/stf/shingi2/shingi2_001.html
 URL: http://www.mhlw.go.jp/stf/shingi2/shingi2_002.html

Information System

- Basic knowledge concerning the use of health foods
 (Health and eating habits, systems concerning health foods such as foods with health claims, analysis of scientific papers, etc.)
- Information on the safety and harm of health foods
 (Examples of harm to health, etc.)
- Scientific information on food ingredients that are currently in the public light
 (Information on individual foods for specified health uses, basic information on vitamins and minerals, etc.)
- Health food ingredient database
 (1) Basic information (for the general public): names, summary, ingredient properties and quality, general information on safety and effectiveness
 (2) Detailed information (for specialists): In addition to the information in (1), analysis methods of main ingredients, assessment of safety and effectiveness based on animal and in vitro testing, and reference materials.

Memo

本シンポジウムご参加により、栄養情報担当者(NR)認定:1単位(更新用)を取得できます。

This Symposium is pre-approved by National Institute of Health and Nutrition for 1 credit for Nutritional Representative (NR).

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